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PART A
IONOSPHERIC DATA

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NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

CRPL-F 249
PART A

NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

Issued
24 May 1965

IONOSPHERIC DATA

CONTENTS

	<u>Page</u>
Ionospheric Data	ii
Table of Smoothed Observed Zurich Sunspot Numbers .	iii
World-Wide Sources of Ionospheric Data	iv
Tables and Graphs of Ionospheric Data	1
Index of Tables and Graphs of Ionospheric Data in CRPL-F249 (Part A)	51

IONOSPHERIC DATA

The CRPL-F series bulletins are issued as part of the responsibility of the Central Radio Propagation Laboratory for the exchange and distribution of ionospheric and related geophysical data. Part A, "Ionospheric Data," and Part B, "Solar-Geophysical Data," of the CRPL-F series present a variety of data collected by CRPL in the course of its research and service activities. Through the CRPL-F series, as part of the general exchange of scientific information, these data are made available for use by others in research on radio propagation and the ionosphere, and in other geophysical applications.

In the CRPL-F series, Part A, tables of monthly median values of vertical-incidence ionospheric data are presented accompanied by graphs of critical frequencies and M(3000)F2. The tables include the number of values entering into the median determination (count). When available, the upper and lower quartile values (indicated by UQ and LQ) are listed for foF2, foF1, foEs, M(3000)F2, h'F2 and h'F. Space limitations do not permit inclusion of quartile values for the other characteristics. The tables are prepared by machine methods and the graphs are plotted automatically.

The tables and graphs present the ionospheric data as received from the originating laboratory. Responsibility for the accuracy and reliability of the data rests entirely with the originator. Medians of data for the U.S. stations are computed by CRPL in accordance with the recommendations of the World-Wide Soundings Committee.

Data will appear in the F-series, Part A, only when the complete daily-hourly tabulations have been received by the CRPL or the World Data Center A for Airglow and Ionosphere. In general, priority of publication is given to the most current data. Data received too long after the month of observation may experience an indefinitely prolonged delay before finding space in the F series, Part A.

Information on symbols, terminology and conventions may be found in the "URSI Handbook of Ionogram Interpretation and Reduction of the World-Wide Soundings Committee," edited by W. R. Piggott and K. Rawer (Elsevier, 1961), which supersedes previous documents. A list of symbols is available from CRPL on request.

Units and Abbreviations of Ionospheric Data Tables

foF2, foEs - - -	Tenths of a megacycle	MED -	Median
foF1, foE - - -	Hundredths of a megacycle	CNT -	Count
h'F2, h'F, h'E -	Kilometers	UQ -	Upper Quartile
M(3000)F2 - - -	Hundredths	LQ -	Lower Quartile

Key to Points of Ionospheric Data Graphs

foF2: x foE : ⊙ M(3000)F2 : ◇
 foF1: Δ foEs: +

< Less-than value indicated. > Greater-than value indicated.
 - - - Interpolated value indicated.

The following table contains the latest available information on twelve-month smoothed average of observed Zurich relative sunspot numbers, beginning with the minimum of April 1954. Final numbers are listed through June 1964, the succeeding values being based on provisional data.

Smoothed Observed Zurich Relative Sunspot Number

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1954				3	4	4	5	7	8	8	10	12
1955	14	16	19	23	29	35	40	46	55	64	73	81
1956	89	98	109	119	127	137	146	150	151	156	160	164
1957	170	172	174	181	186	188	191	194	197	200	201	200
1958	199	201	201	197	191	187	185	185	184	182	181	180
1959	179	177	174	169	165	161	156	151	146	141	137	132
1960	129	125	122	120	117	114	109	102	98	93	88	84
1961	80	75	69	64	60	56	53	52	52	51	50	49
1962	45	42	40	39	39	38	37	35	33	31	30	30
1963	29	30	30	29	29	28	28	27	27	26	24	21
1964	20	18	15	13	11	10	10	10	10	10		

THE IONOSPHERIC DATA PRESENTED IN THE 100 TABLES AND GRAPHS OF THIS ISSUE WERE ASSEMBLED BY THE CENTRAL RADIO PROPAGATION LABORATORY FOR ANALYSIS, CORRELATION, AND DISTRIBUTION. THE FOLLOWING ARE THE SOURCES OF DATA.

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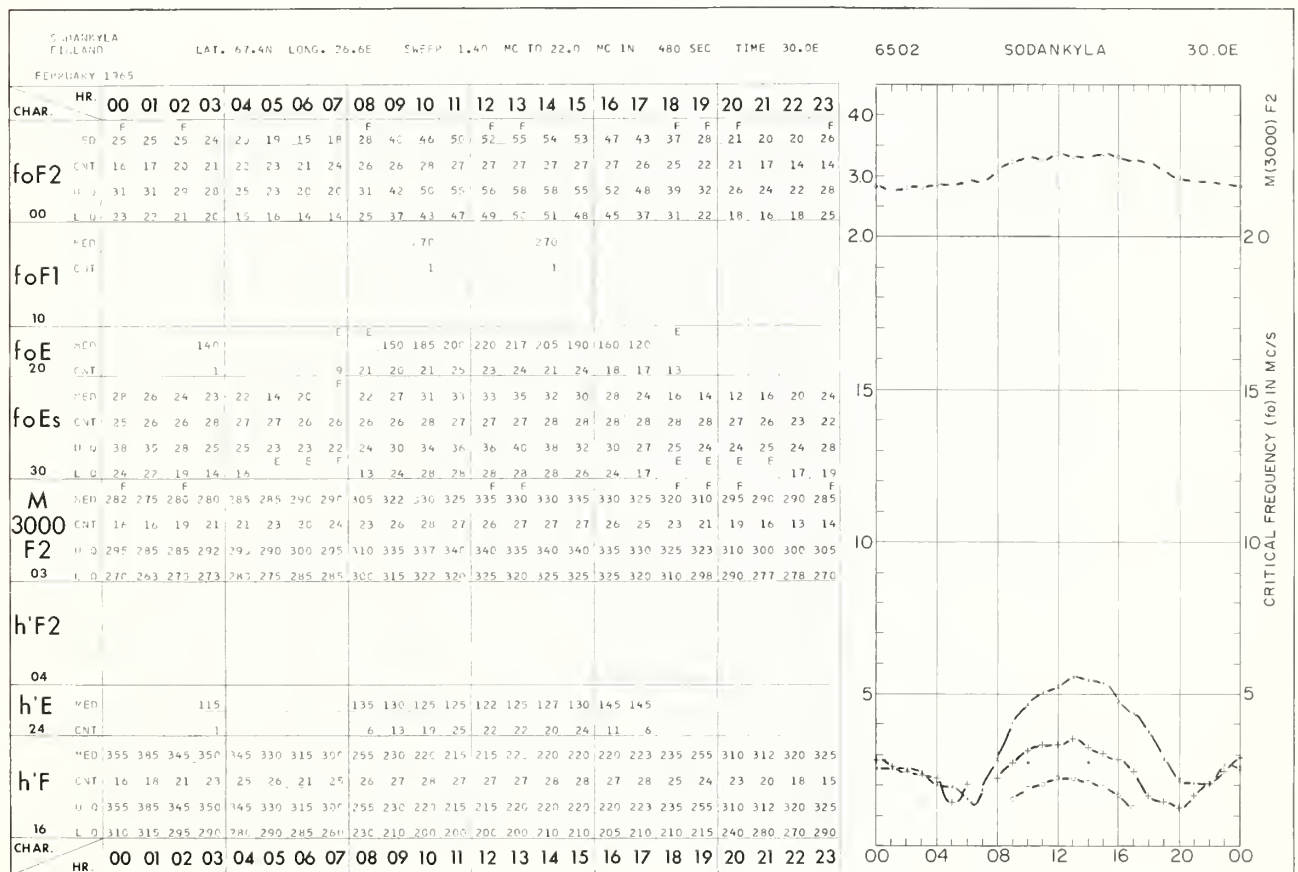
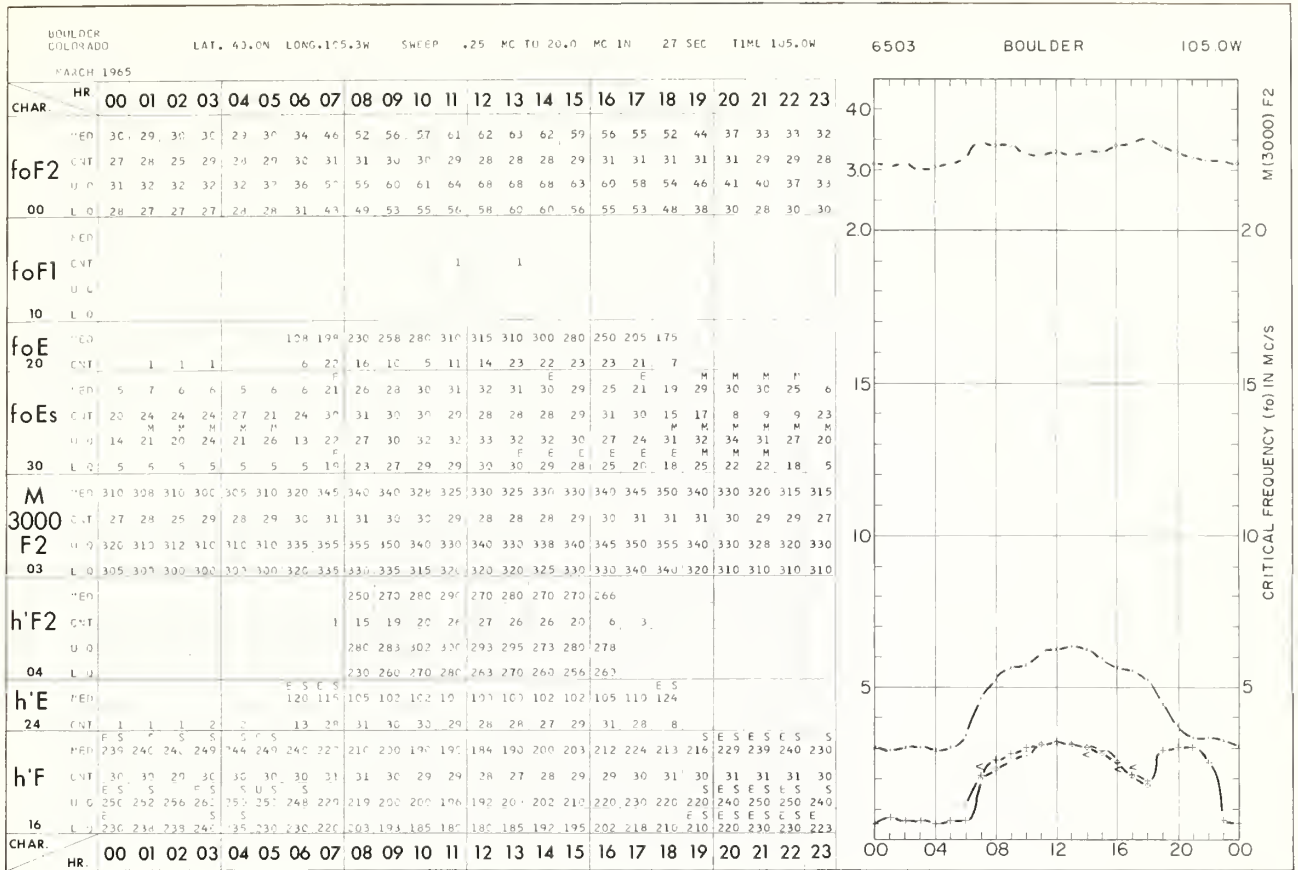
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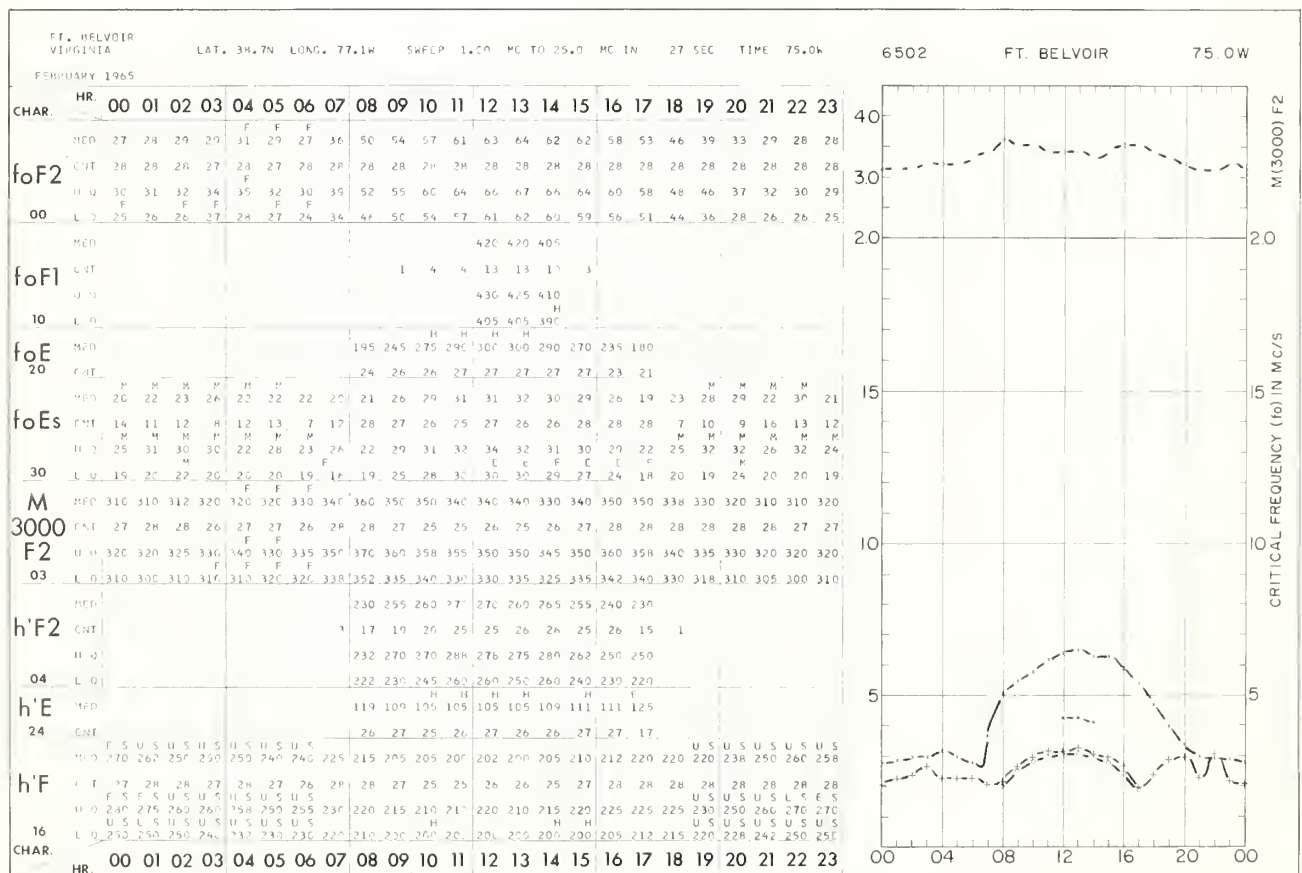
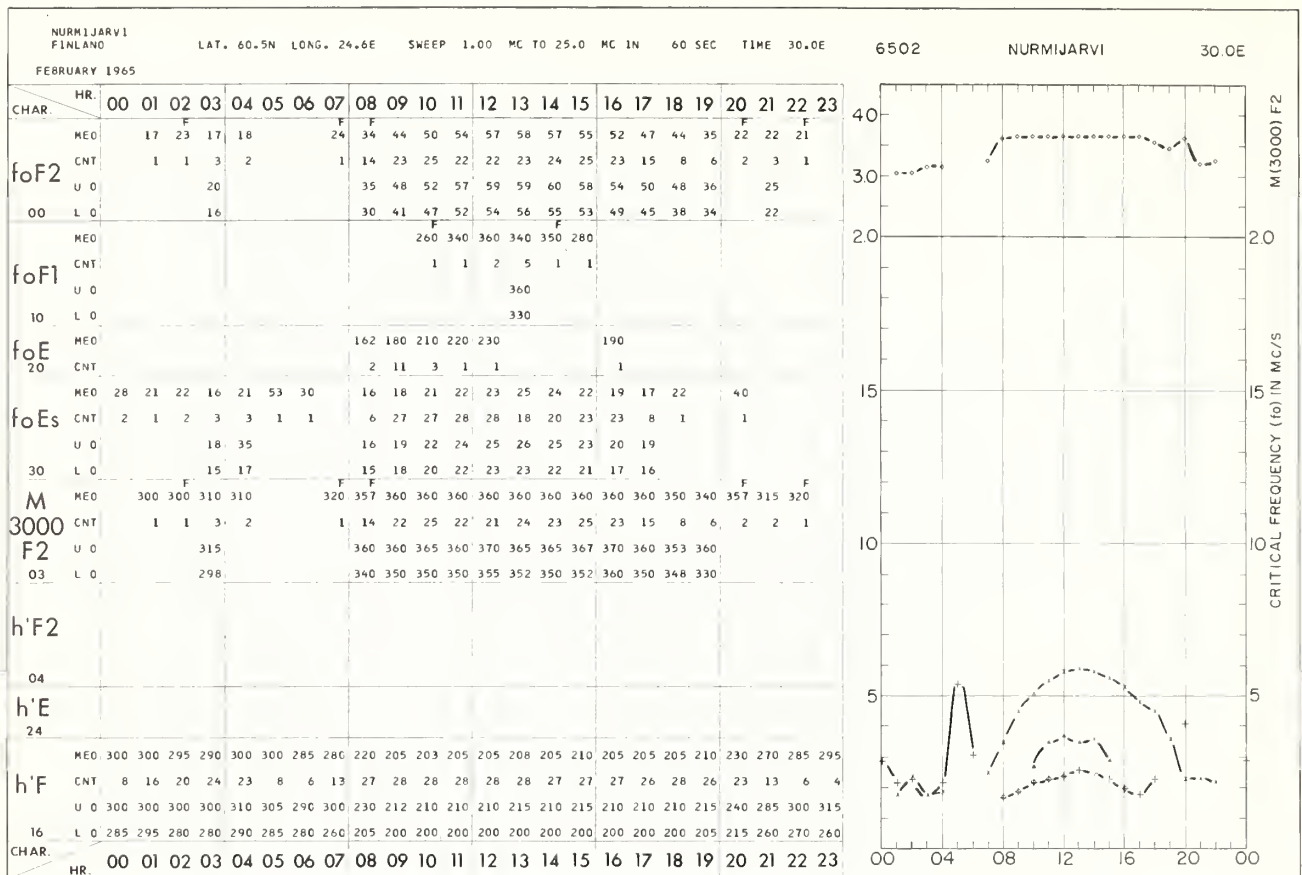
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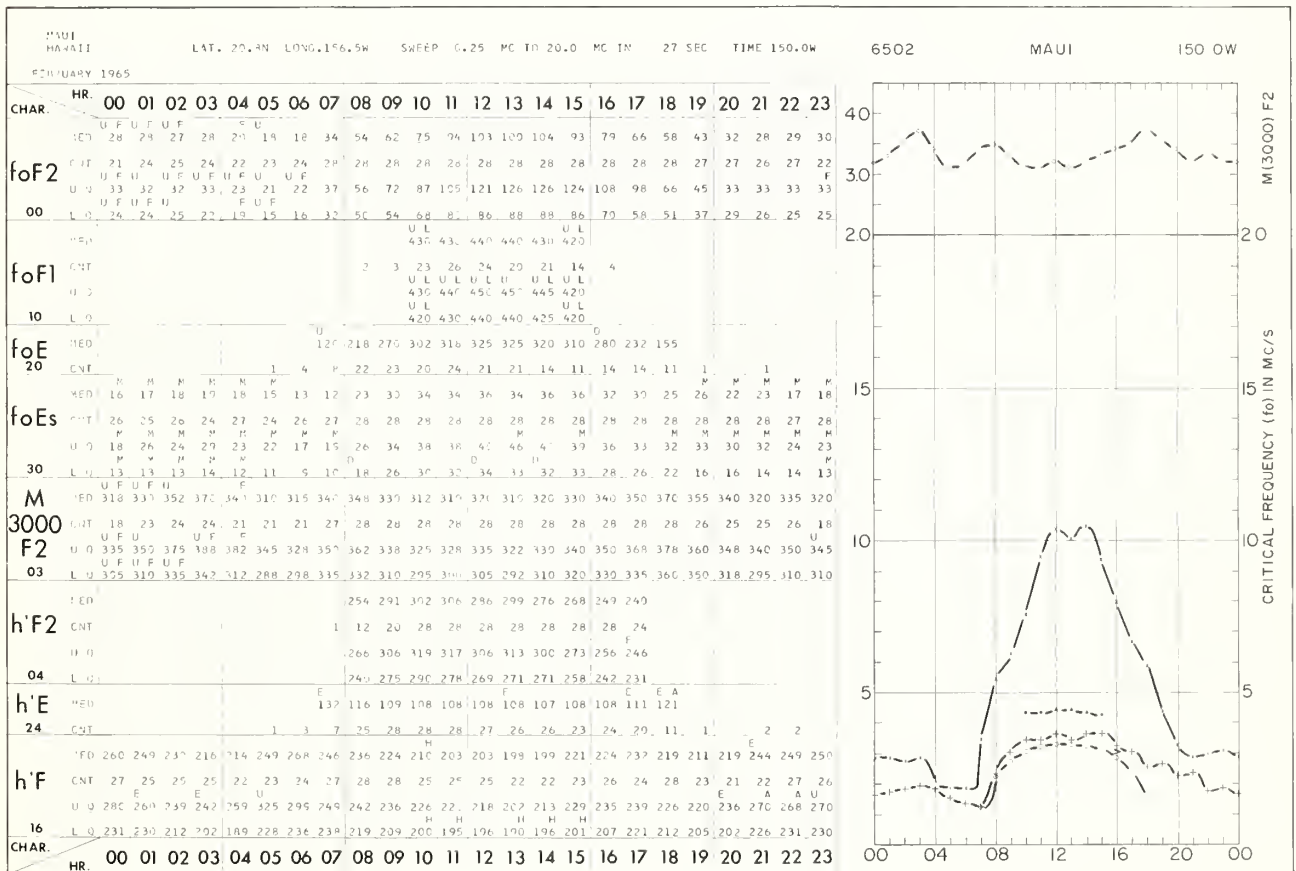
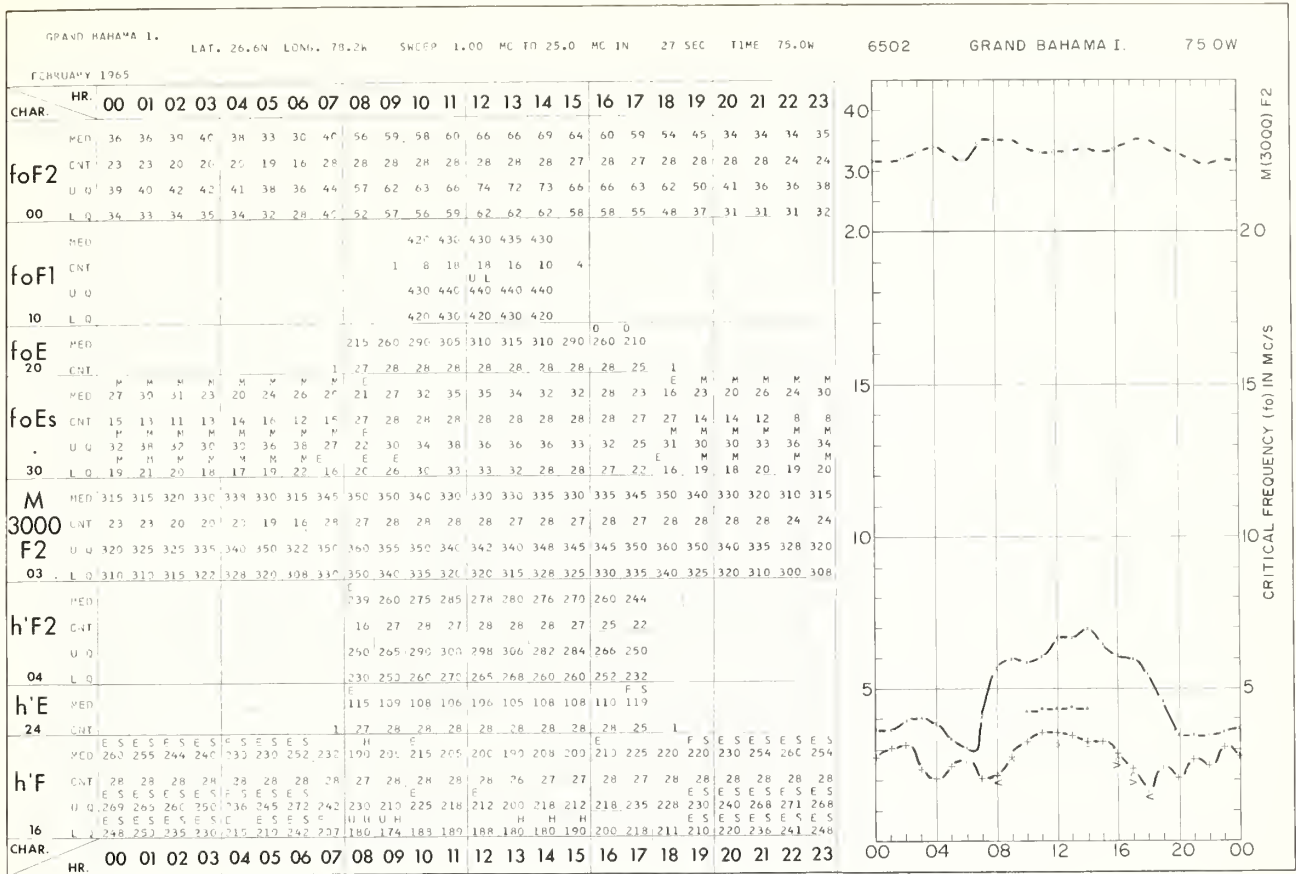
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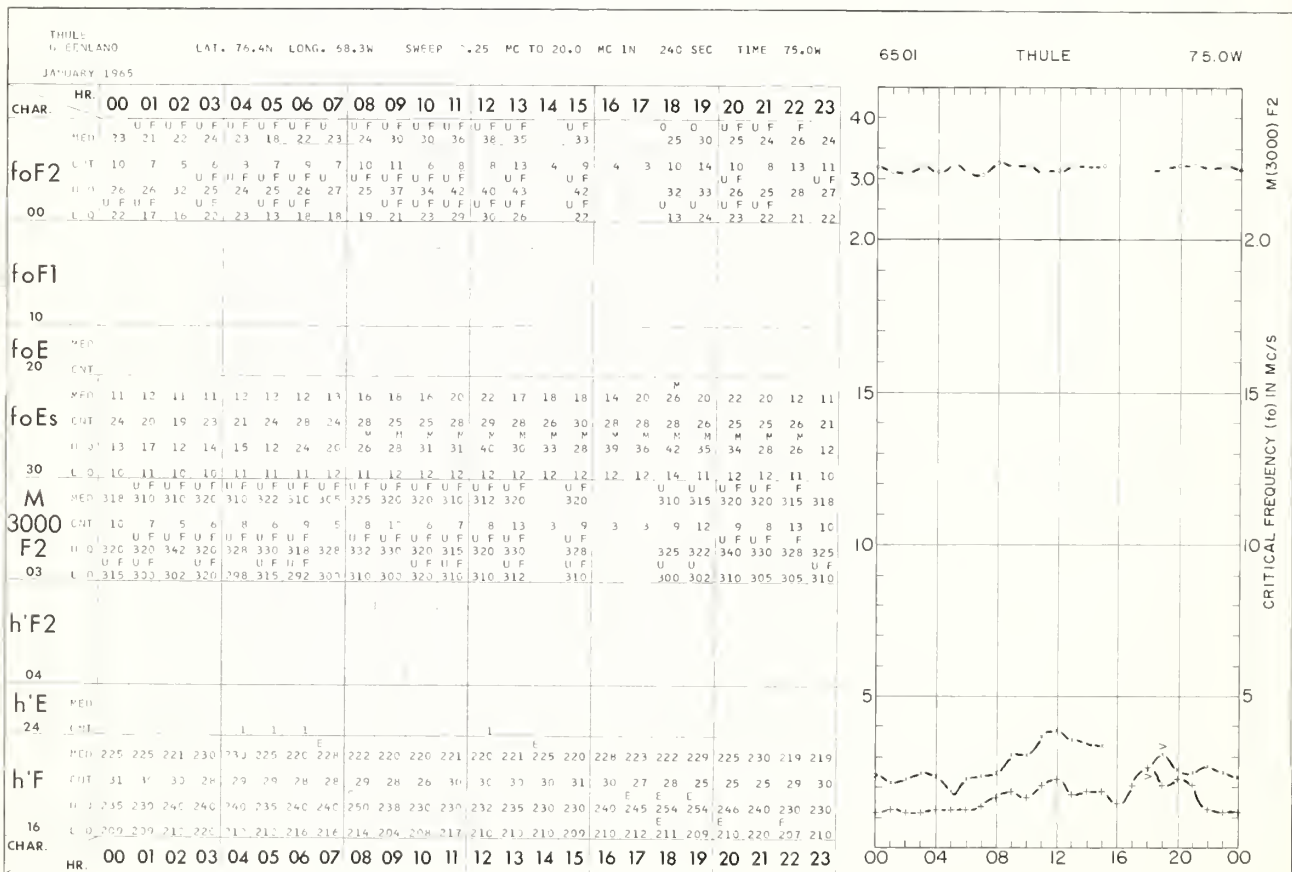
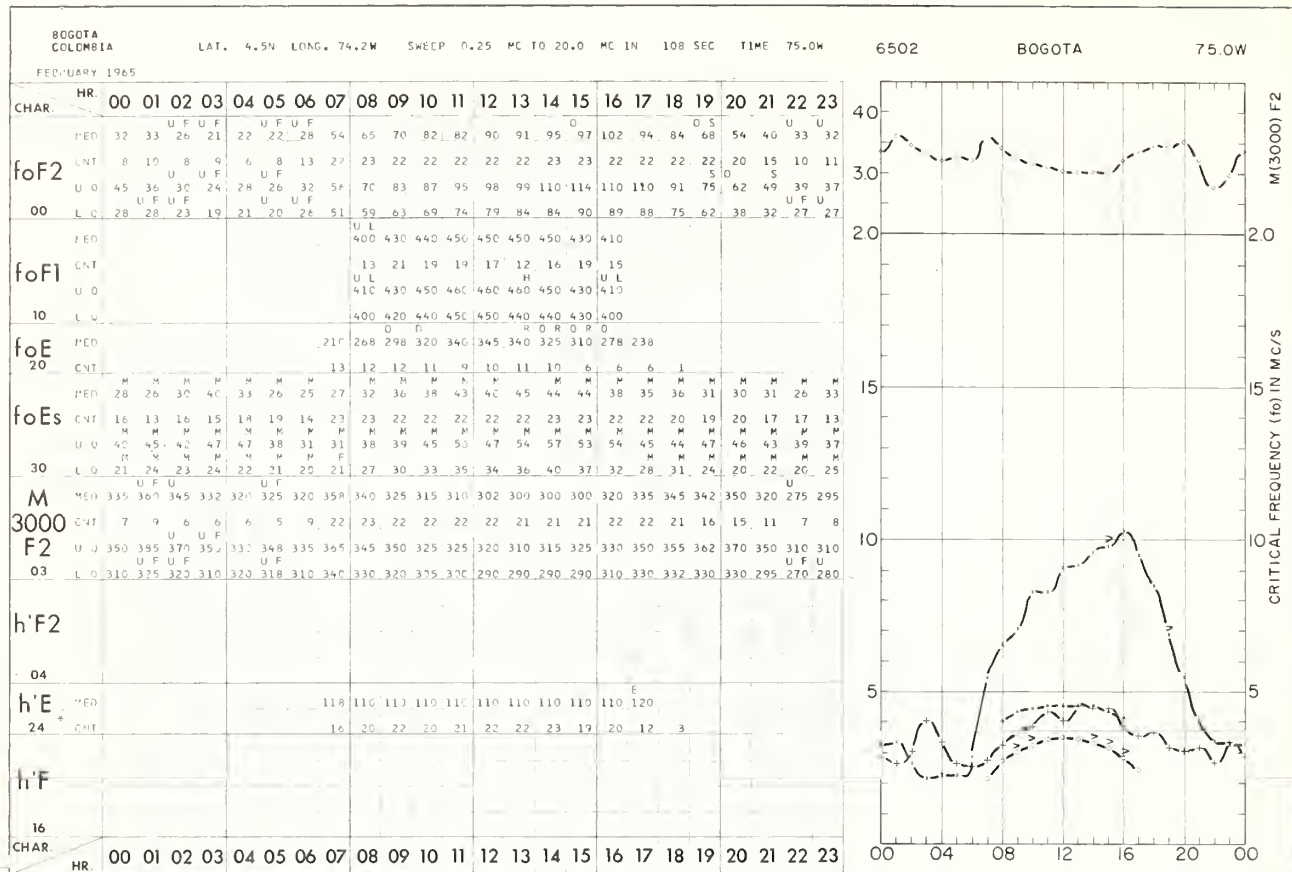
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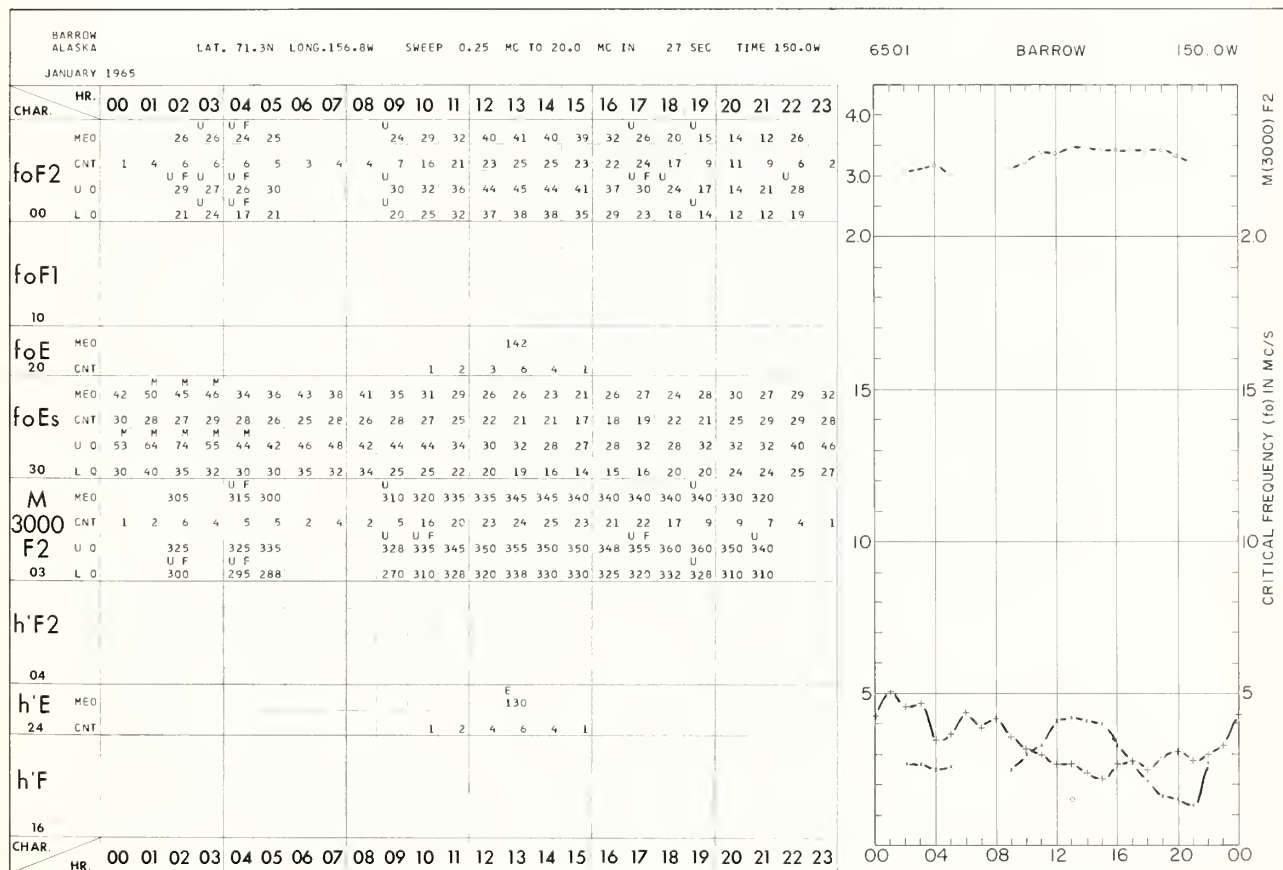
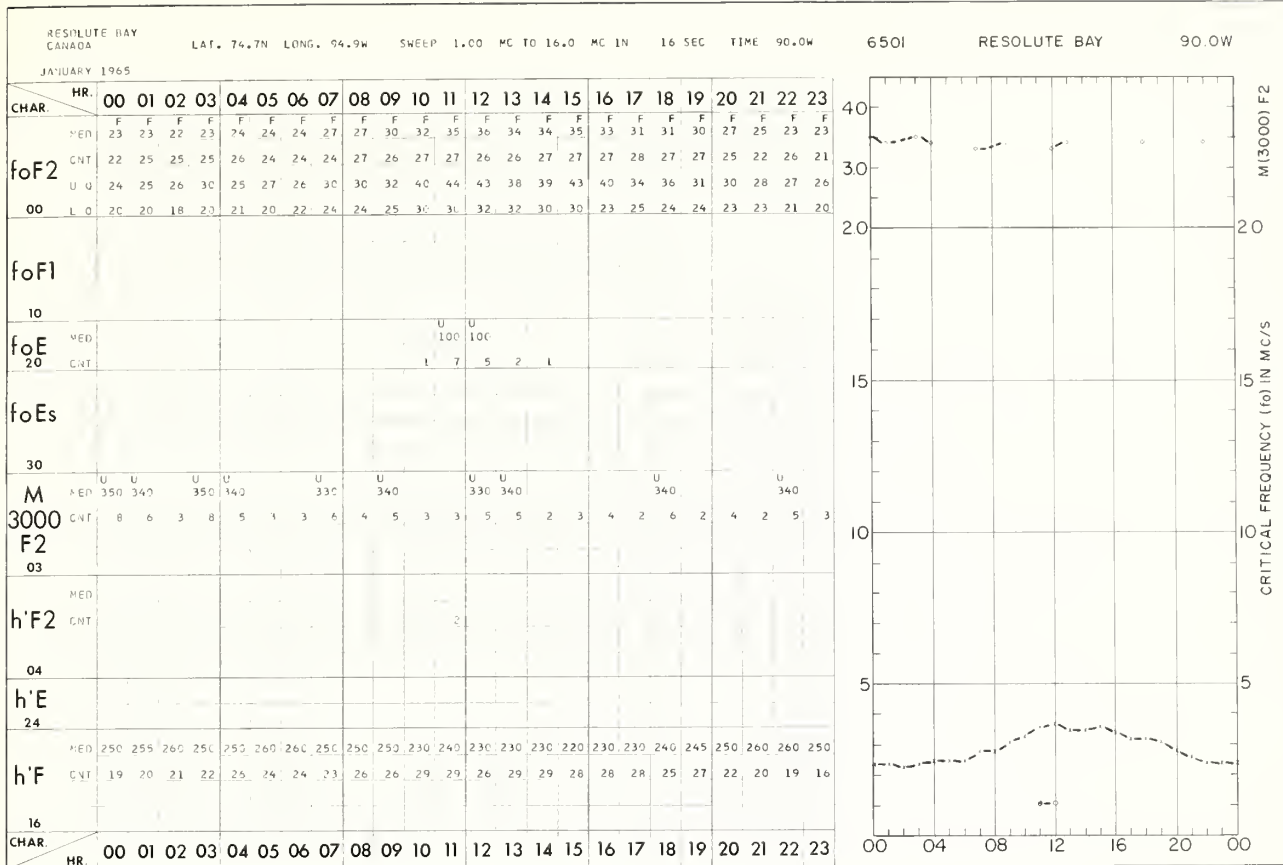
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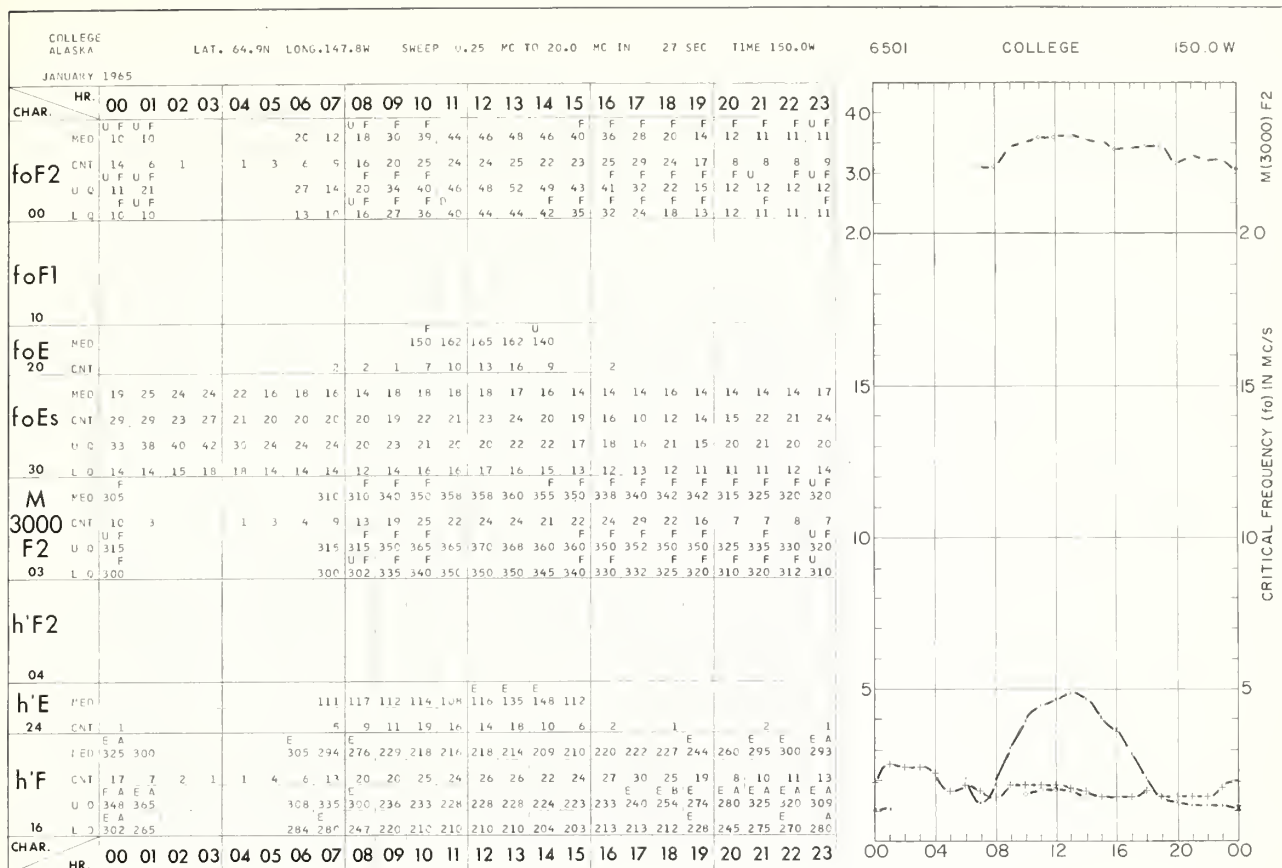


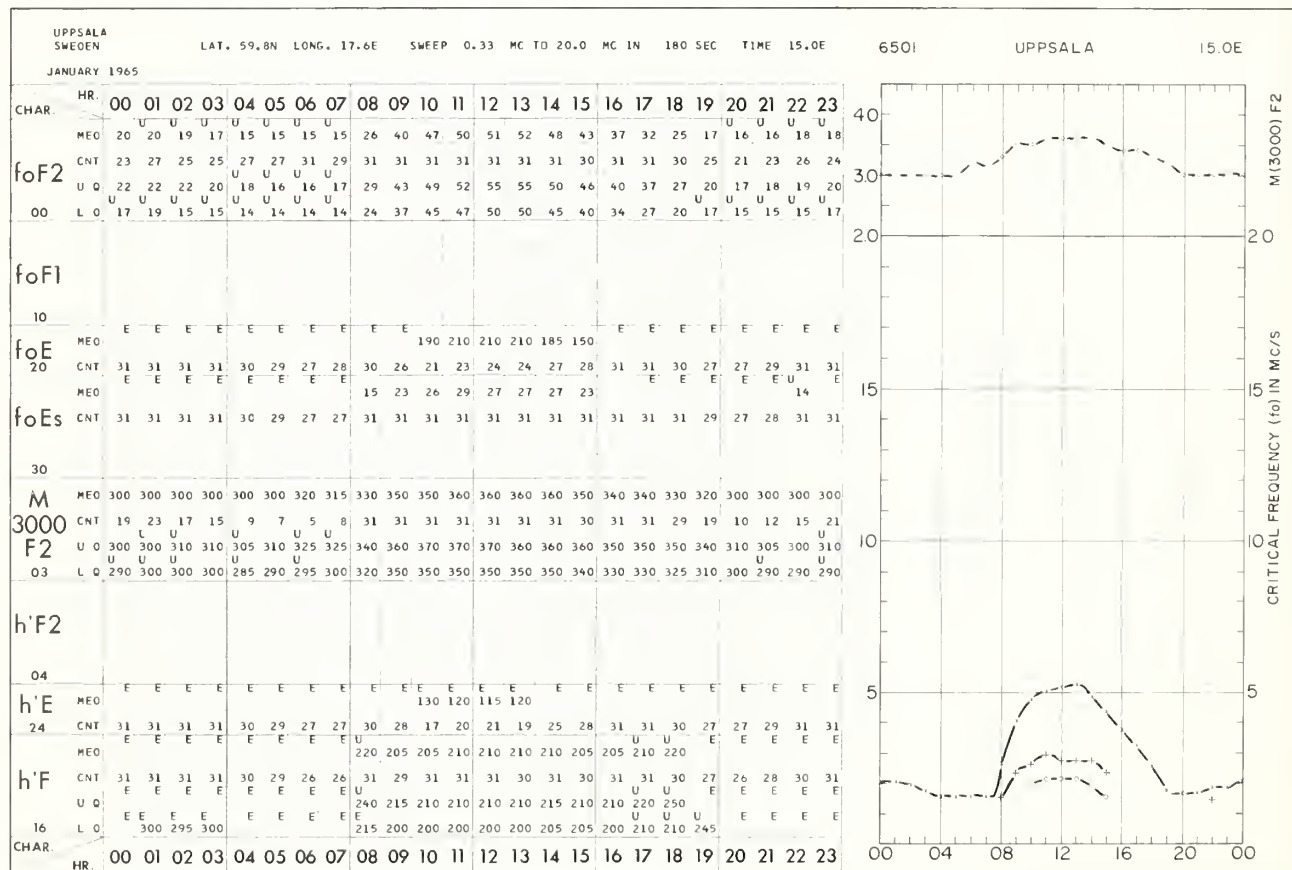
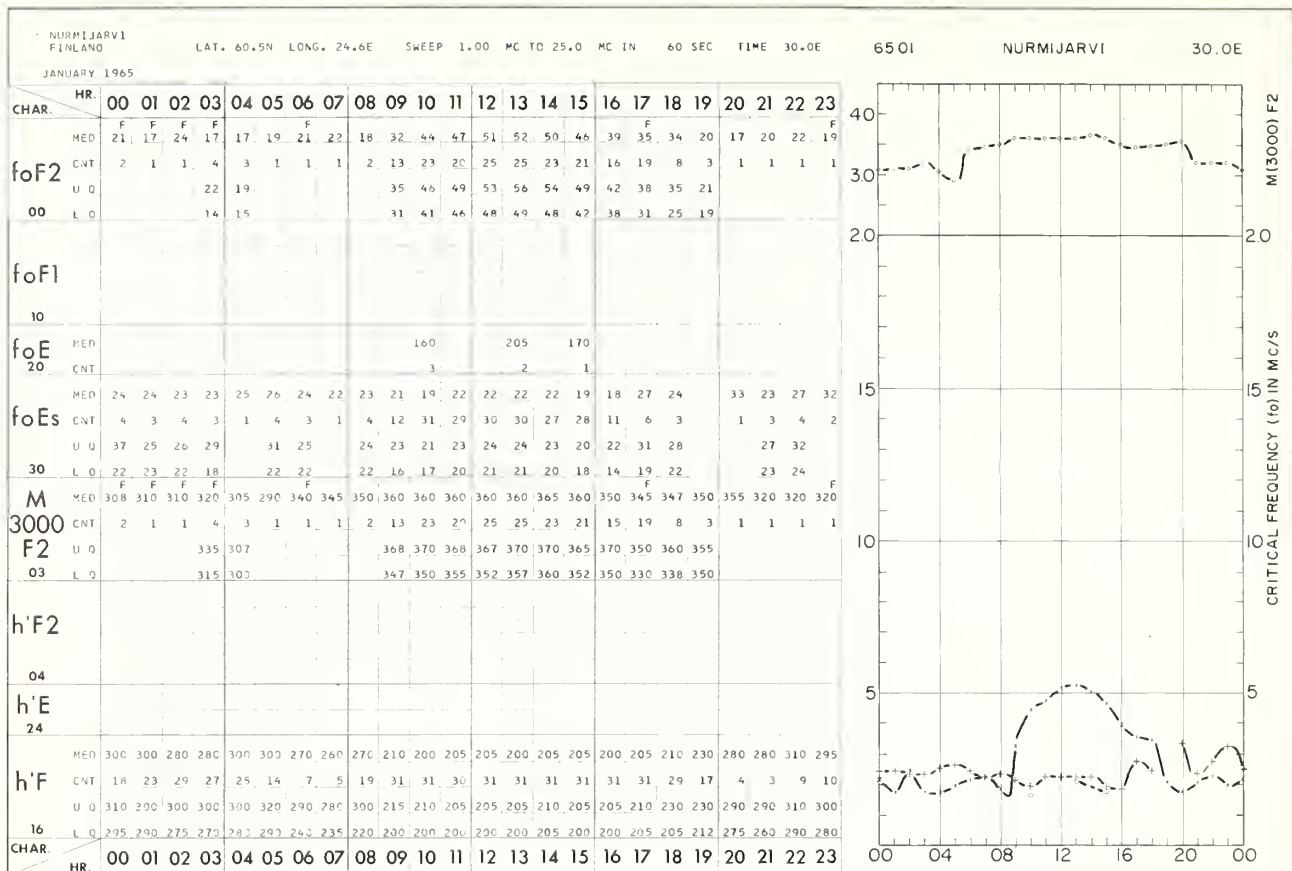


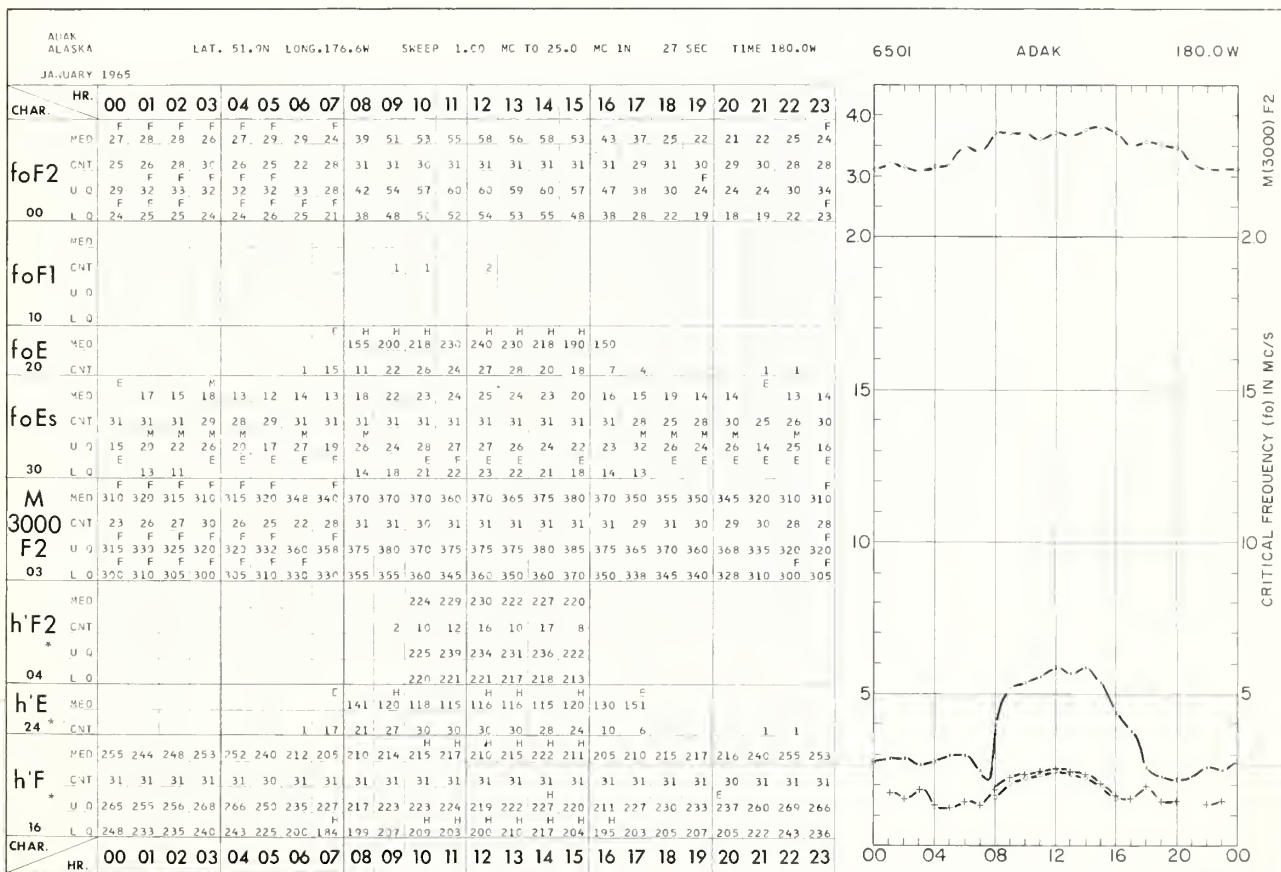
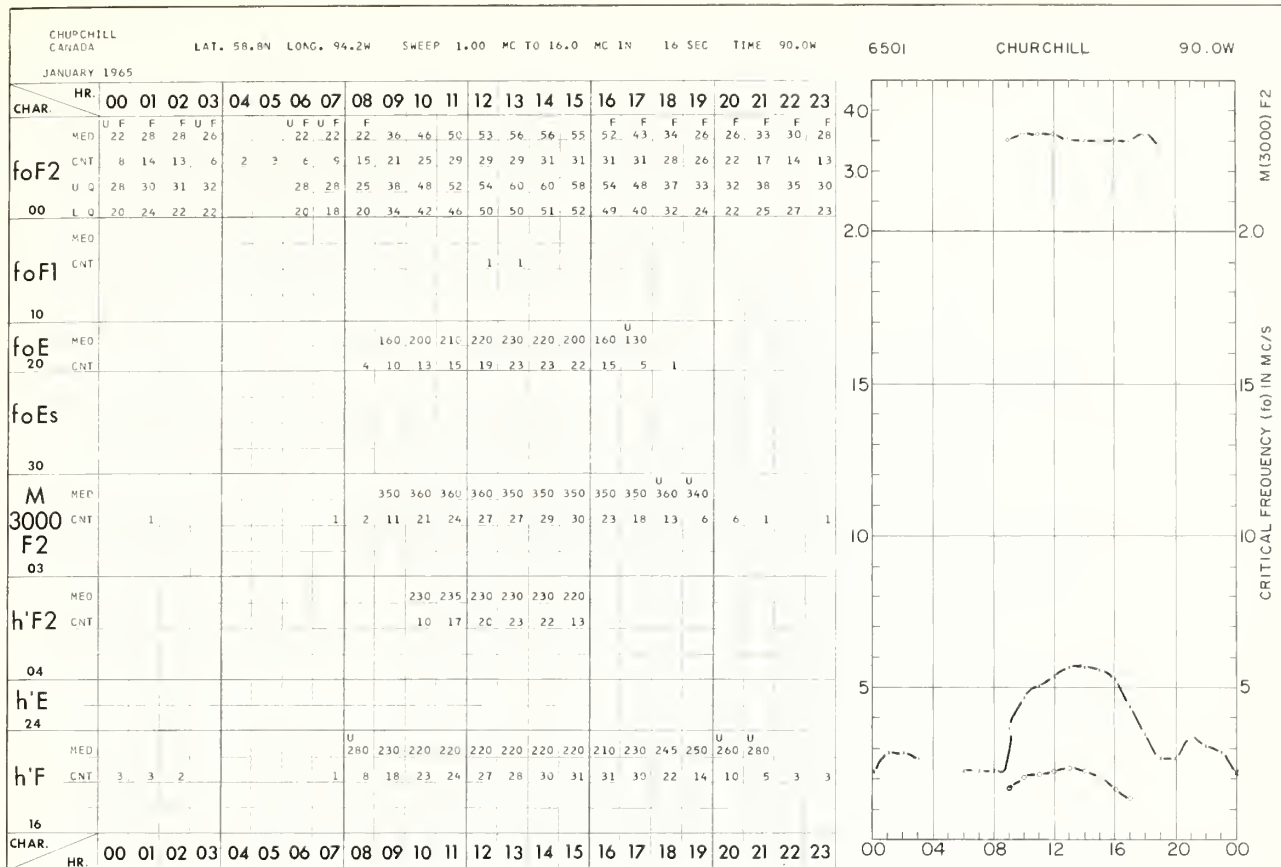




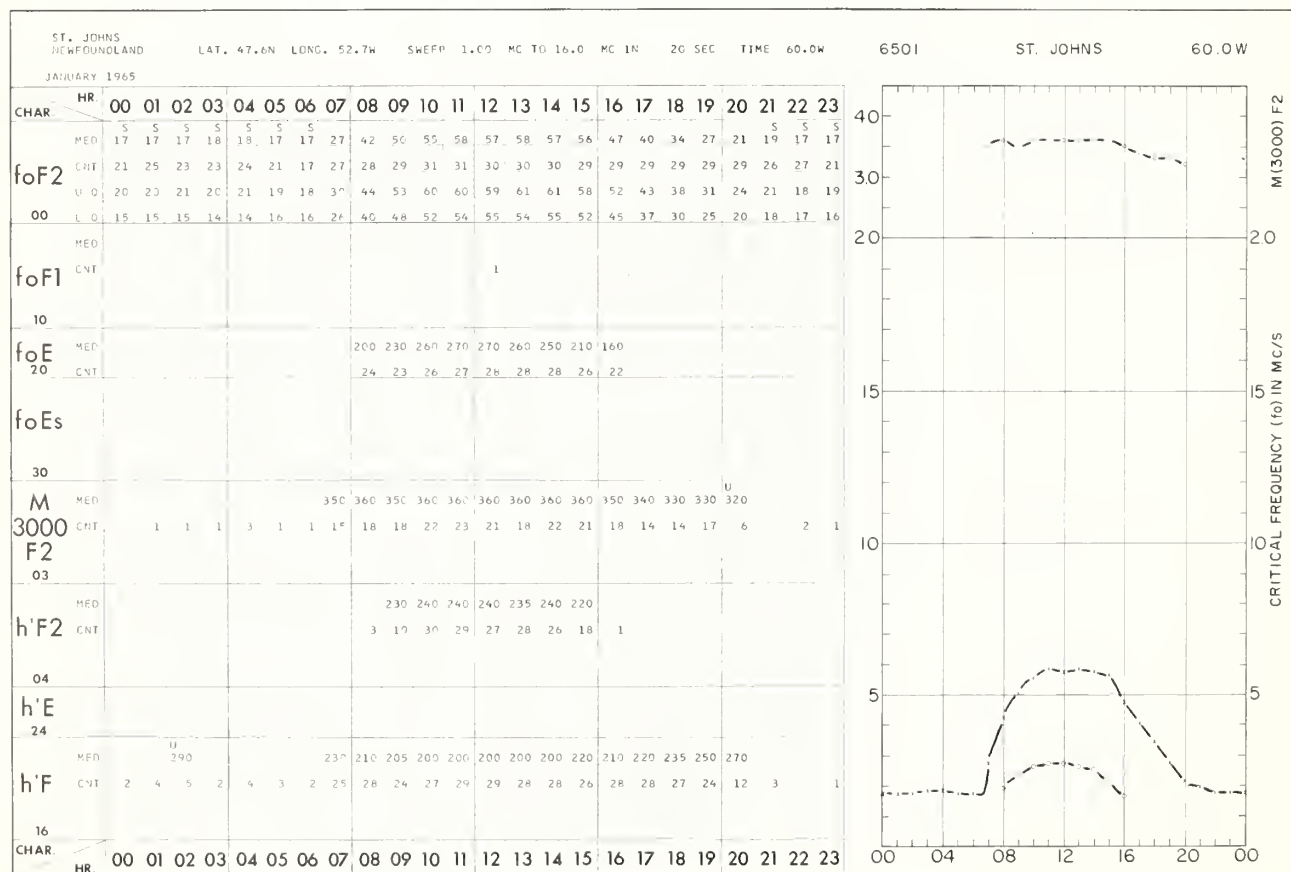
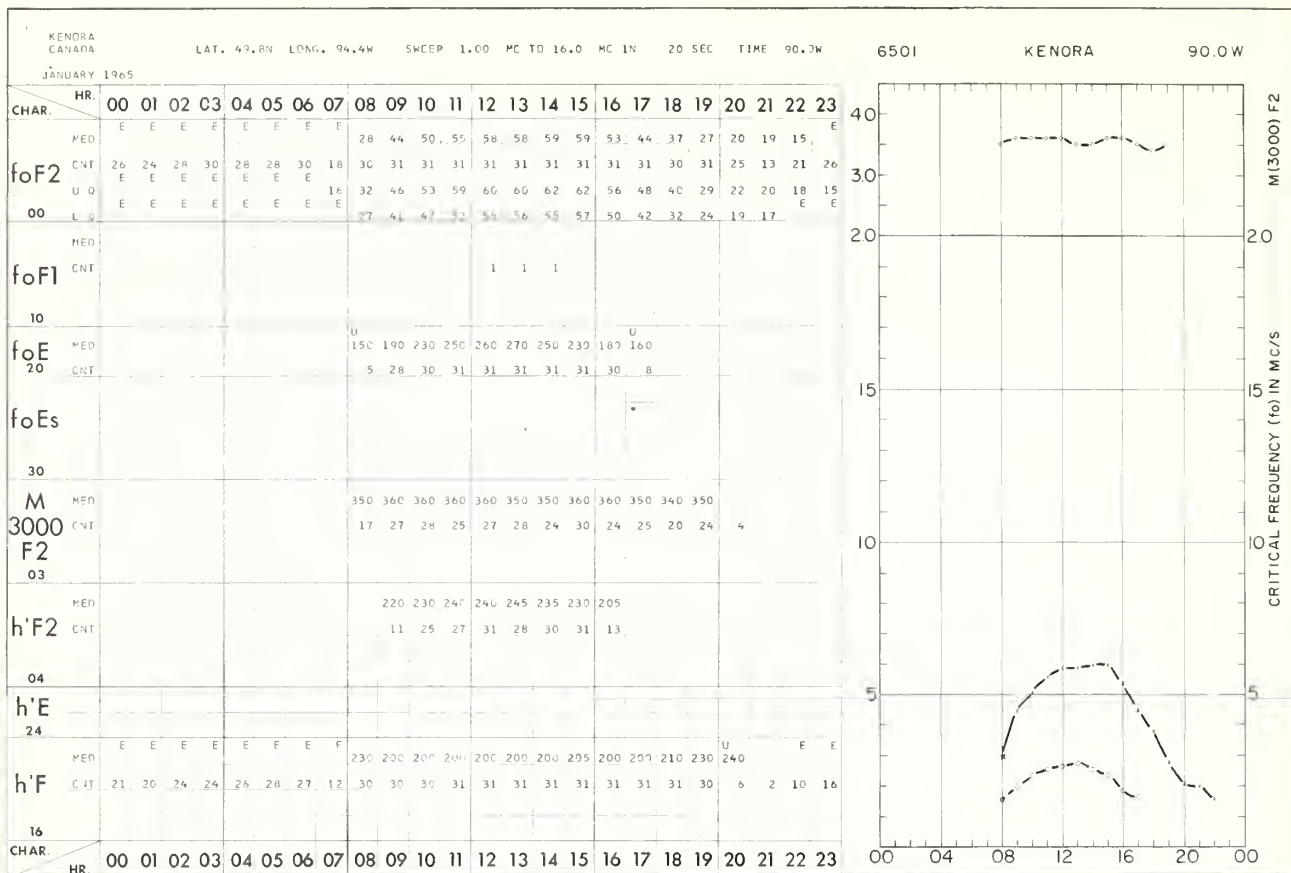


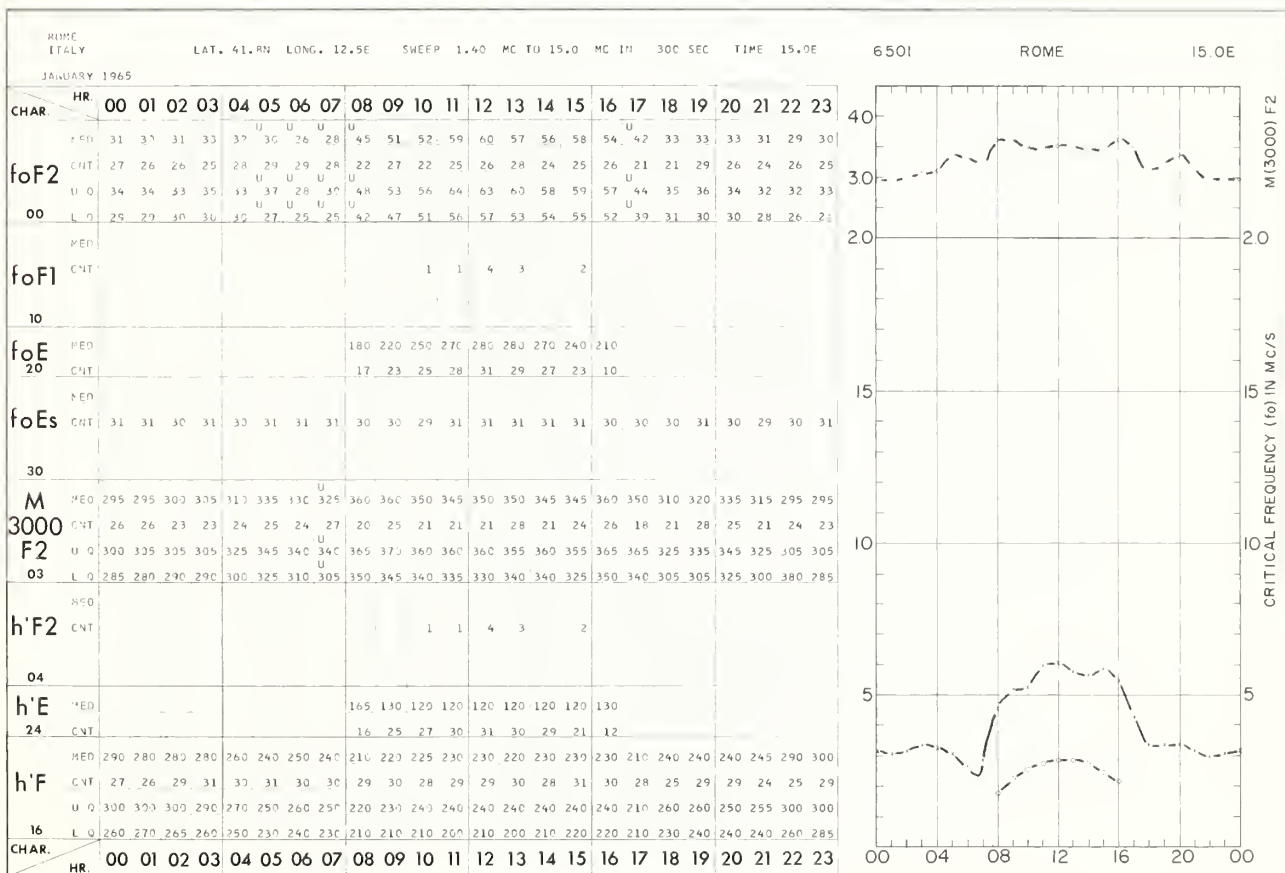
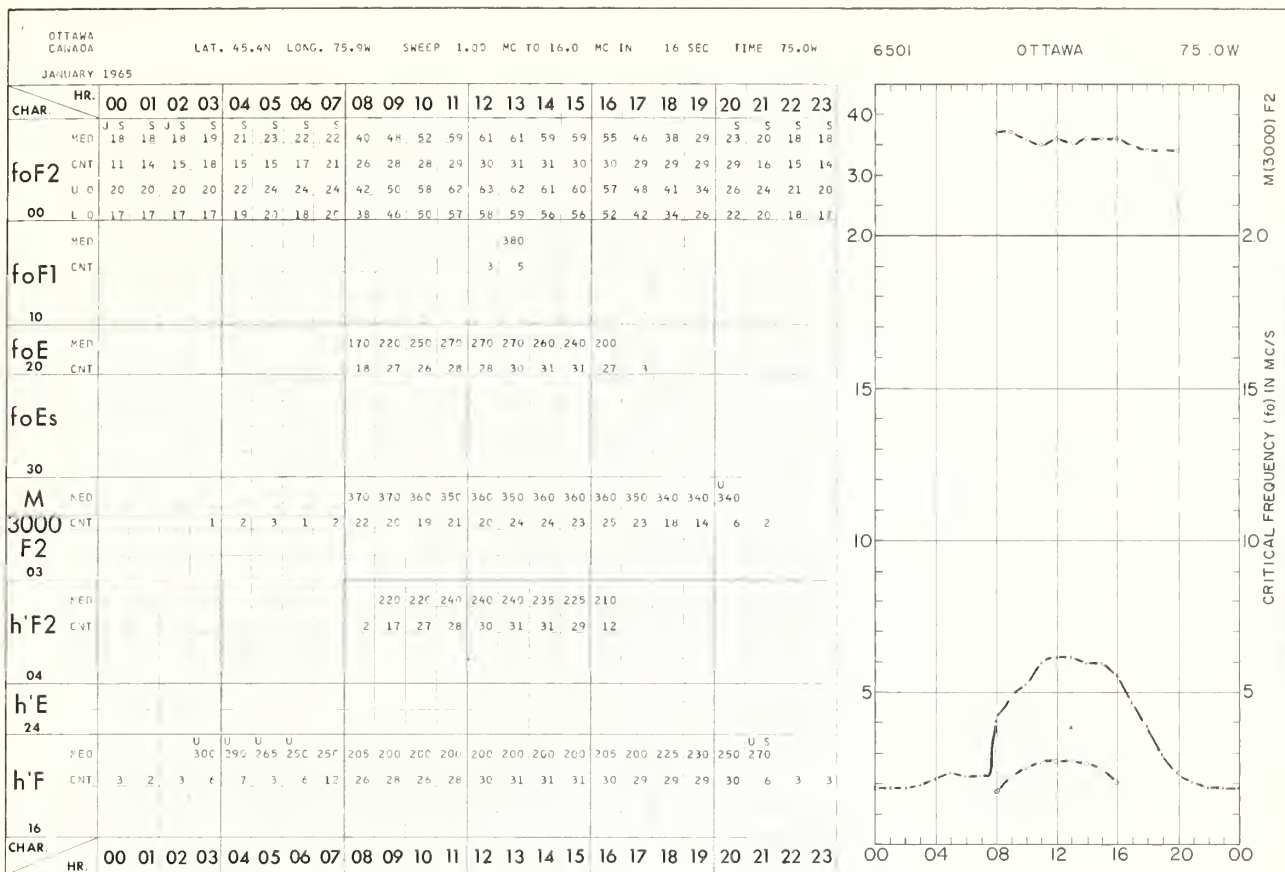


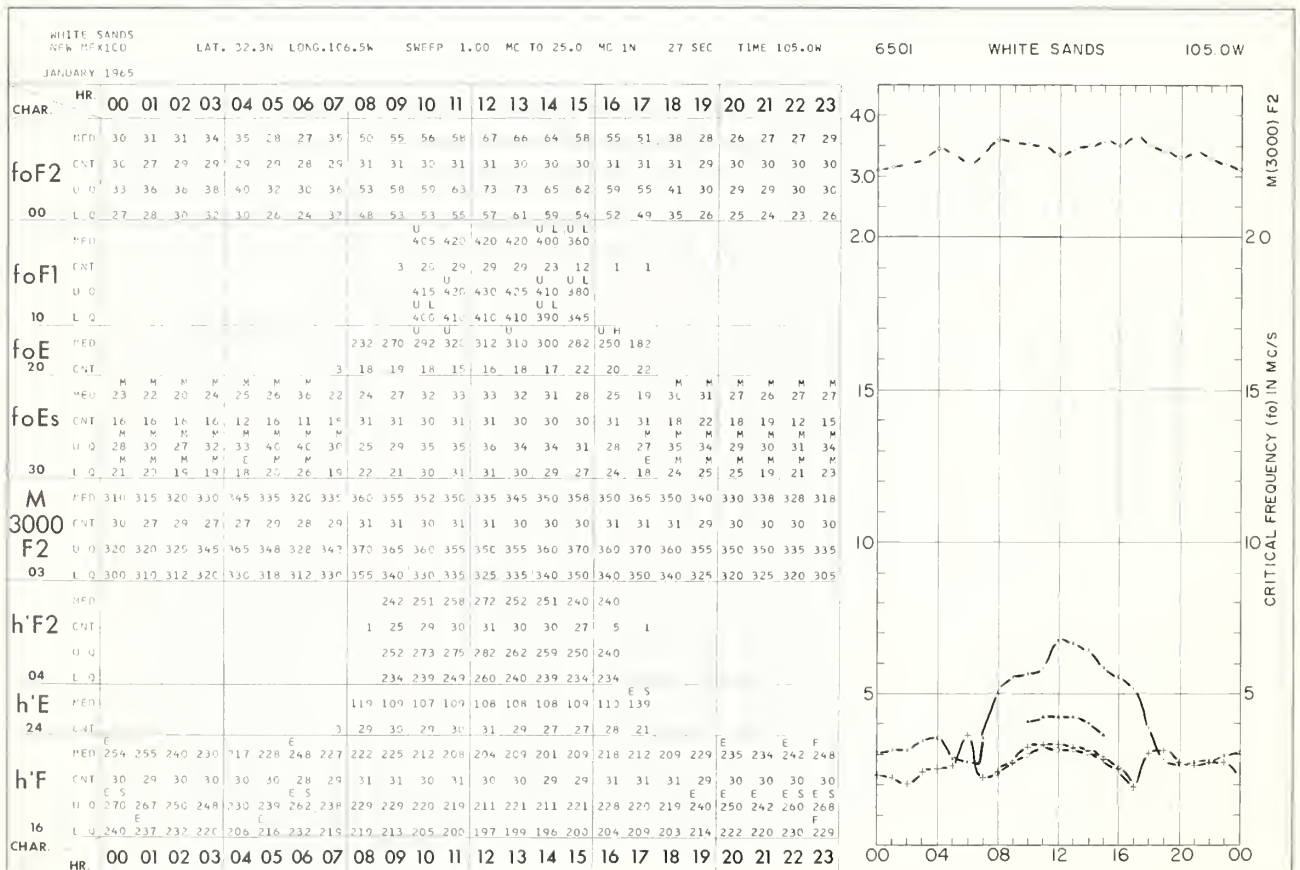
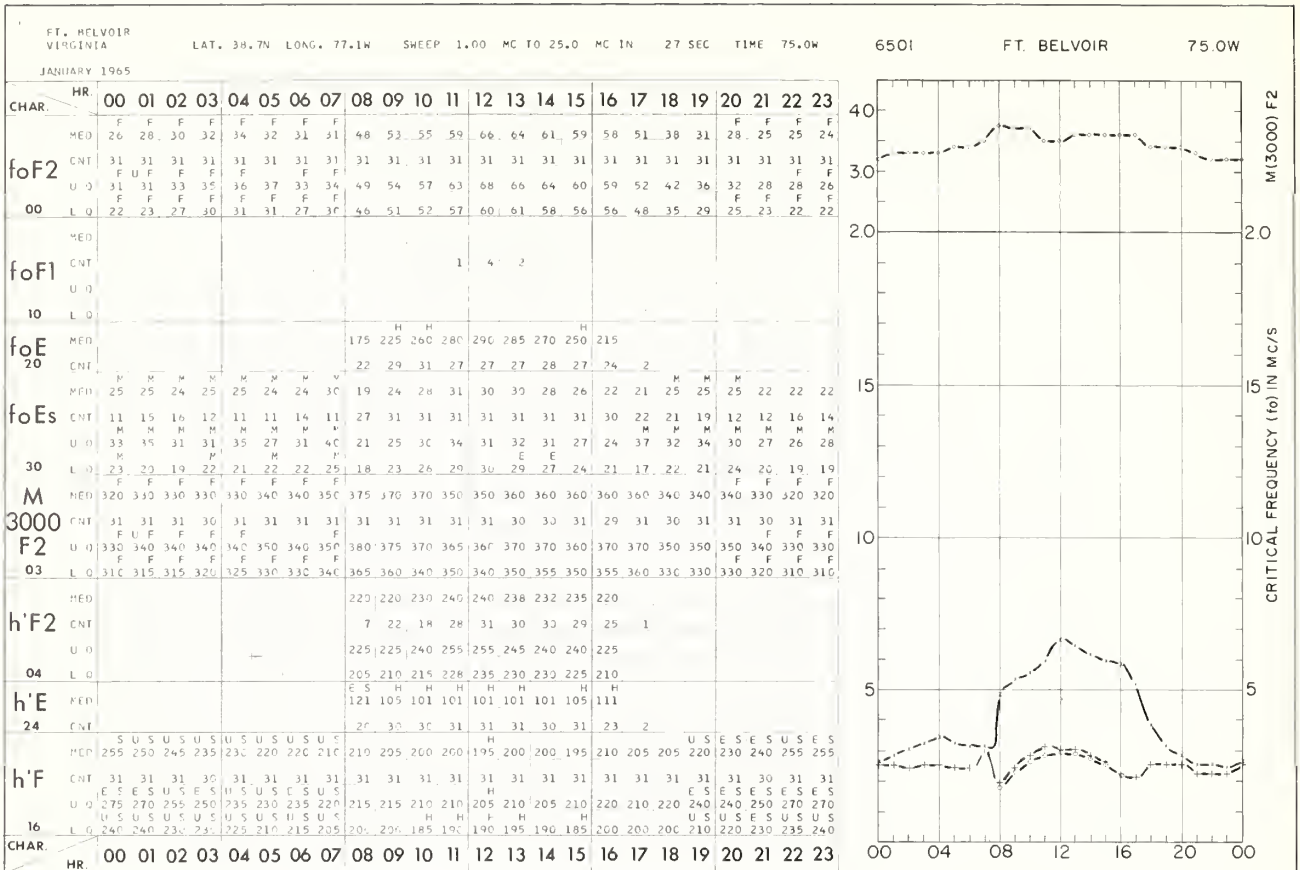


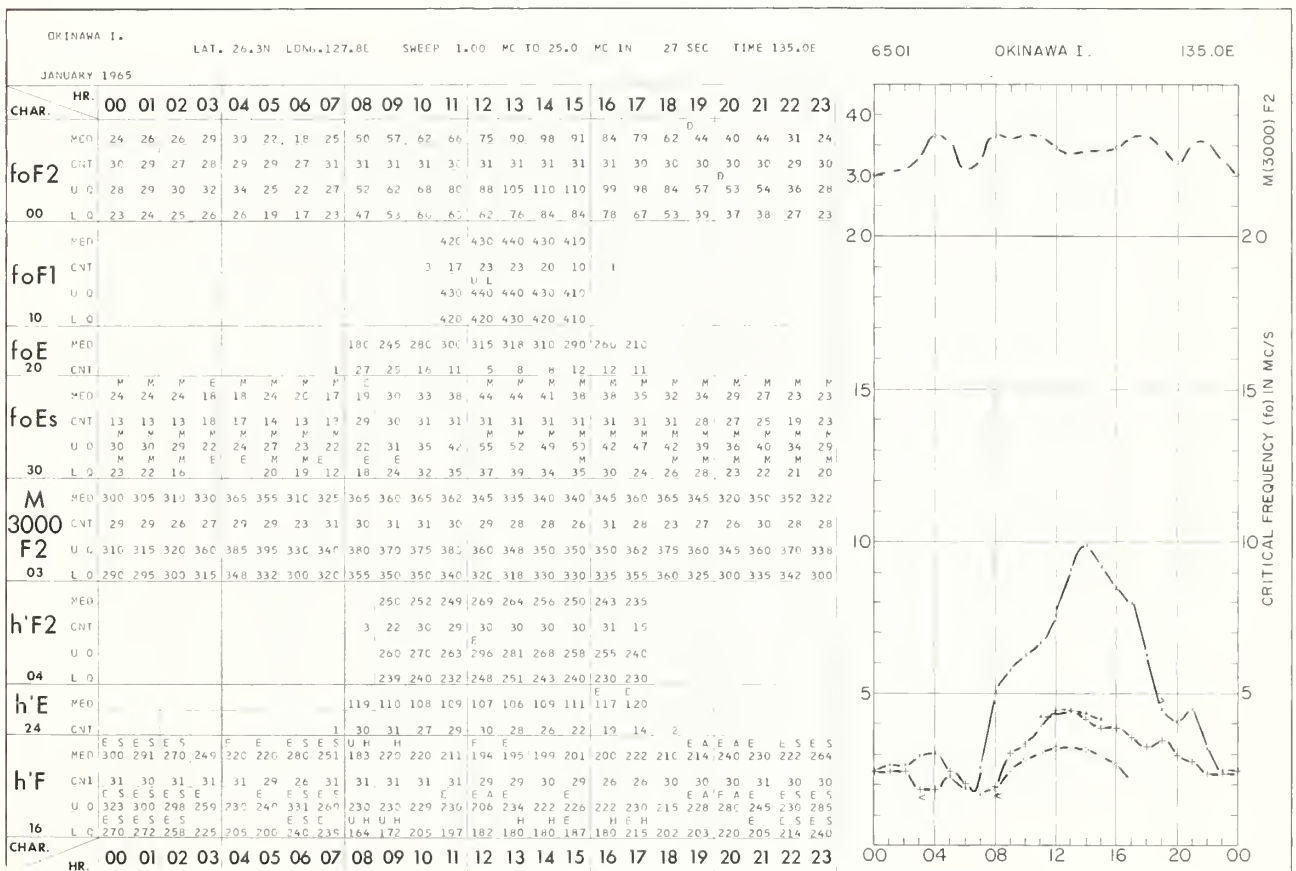
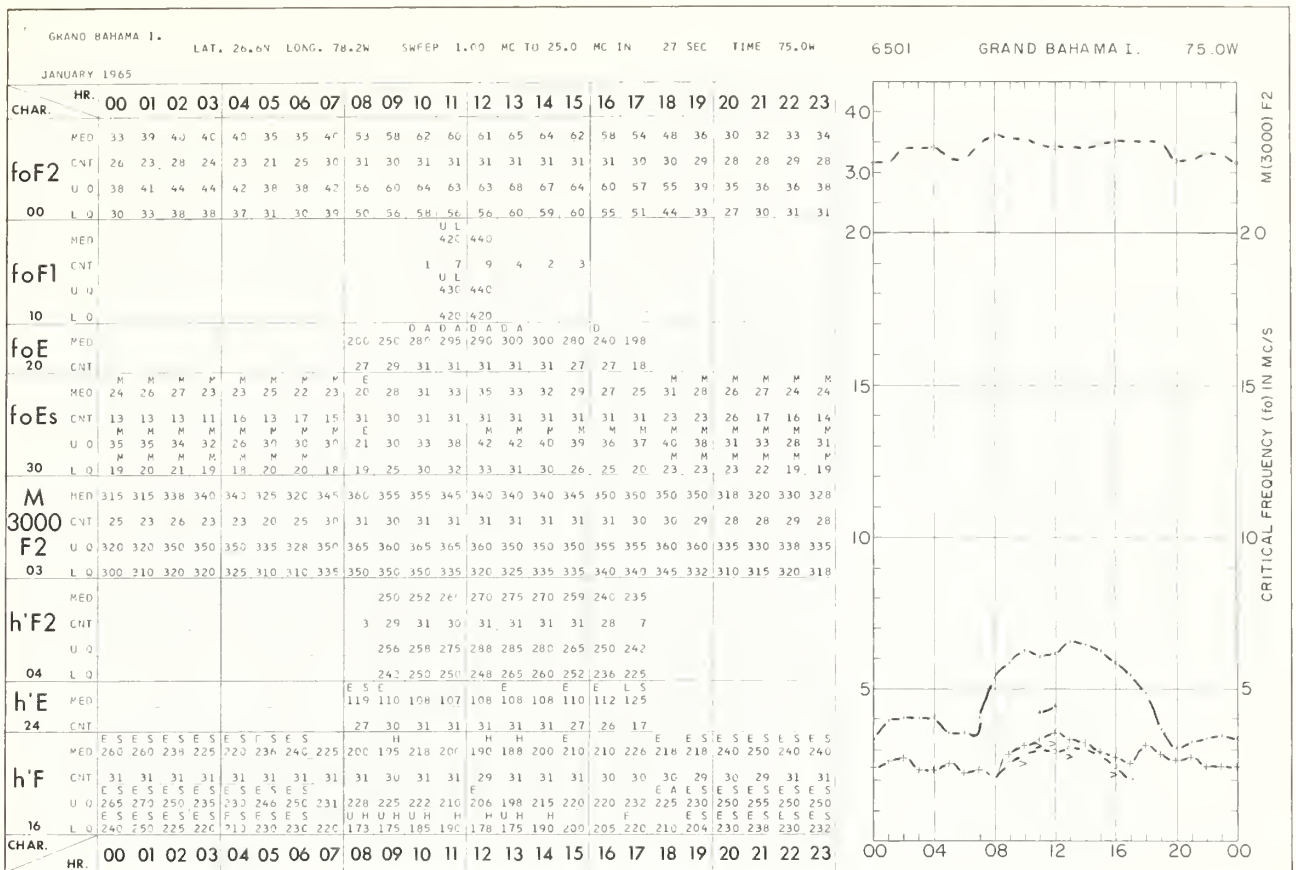


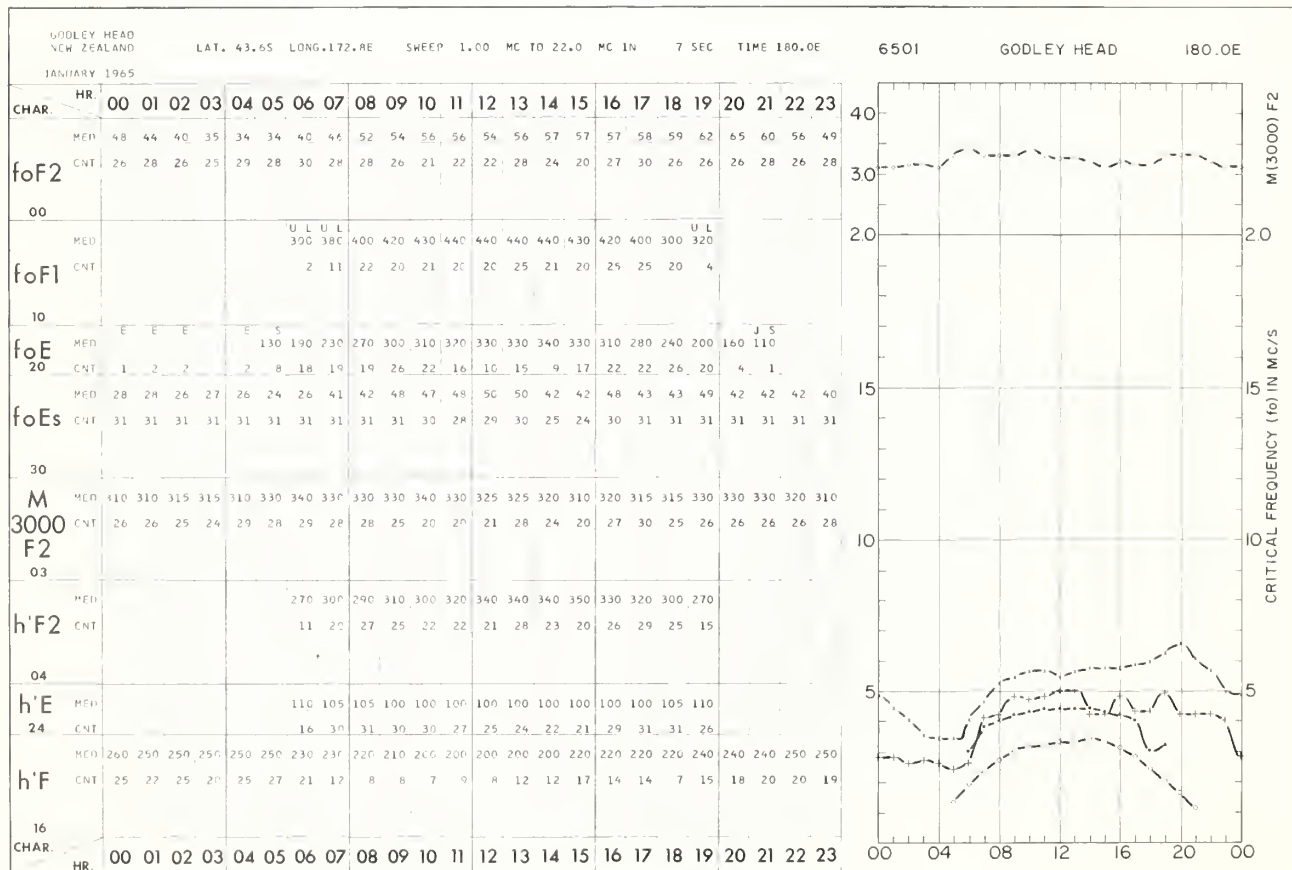
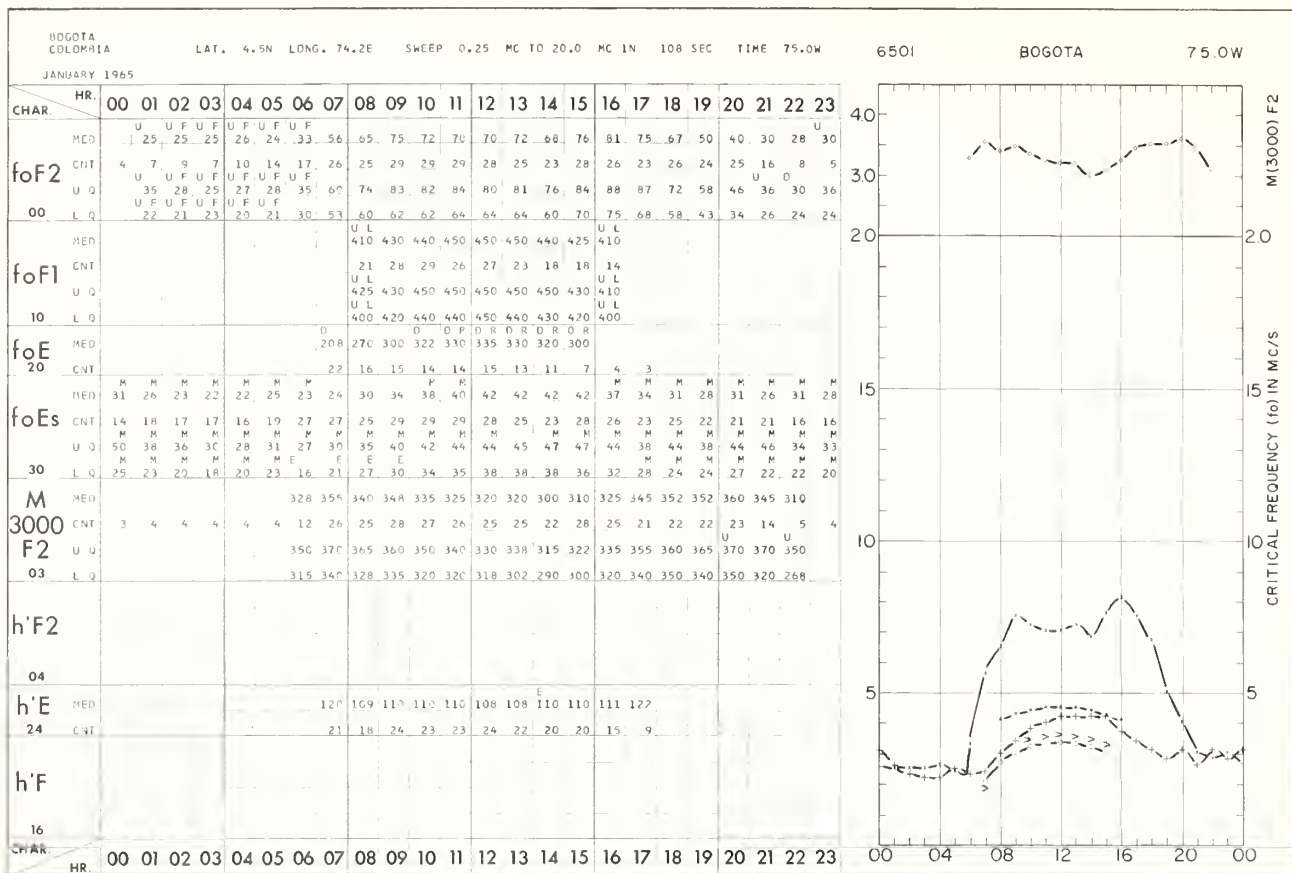
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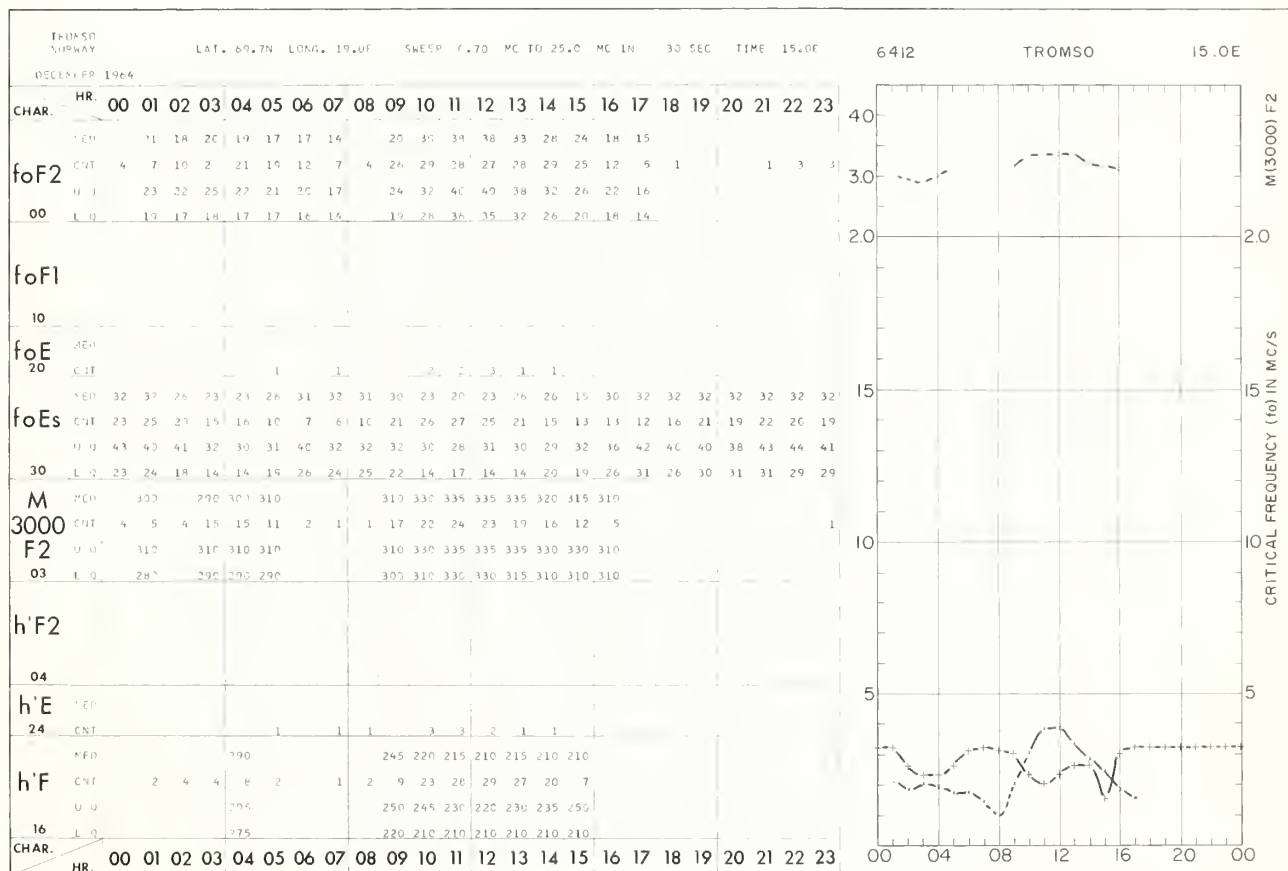
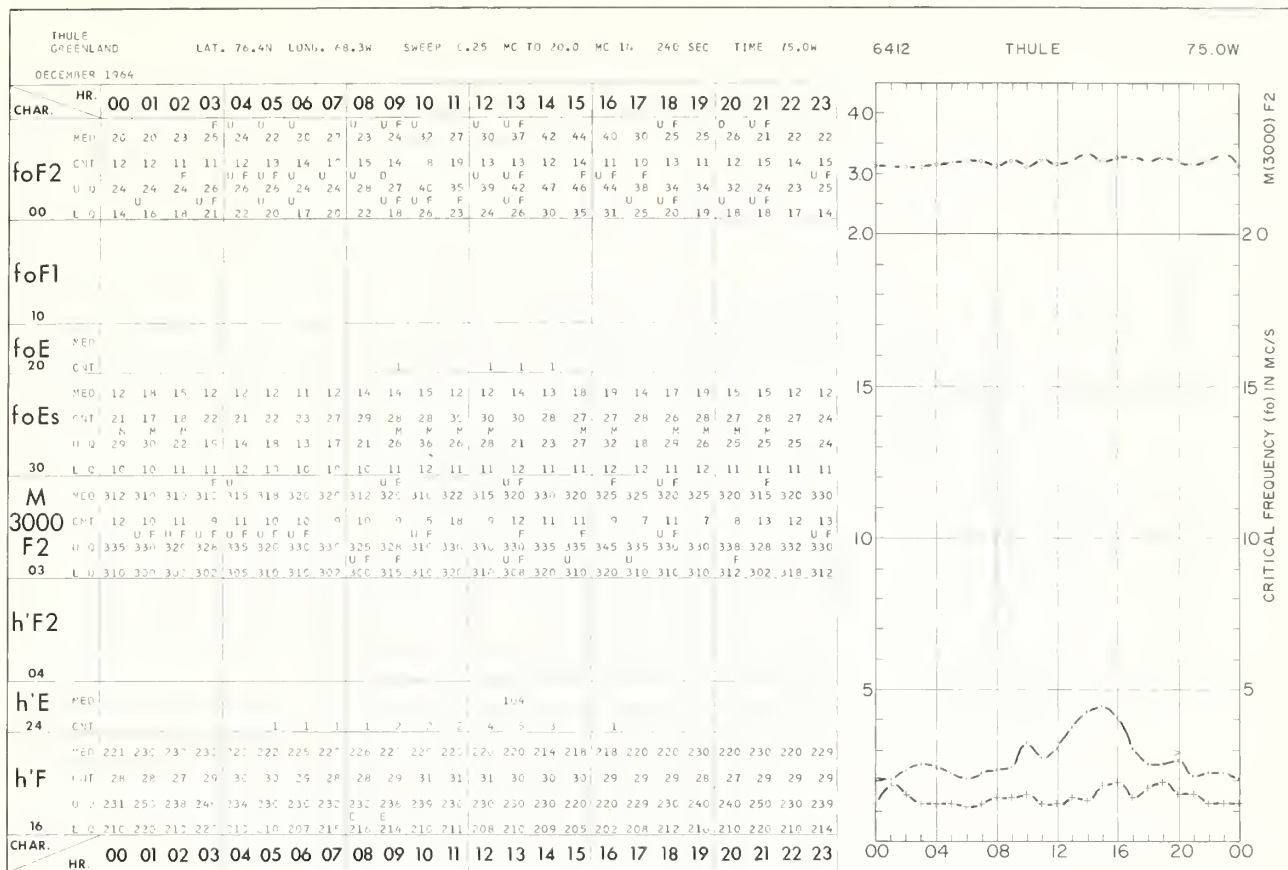


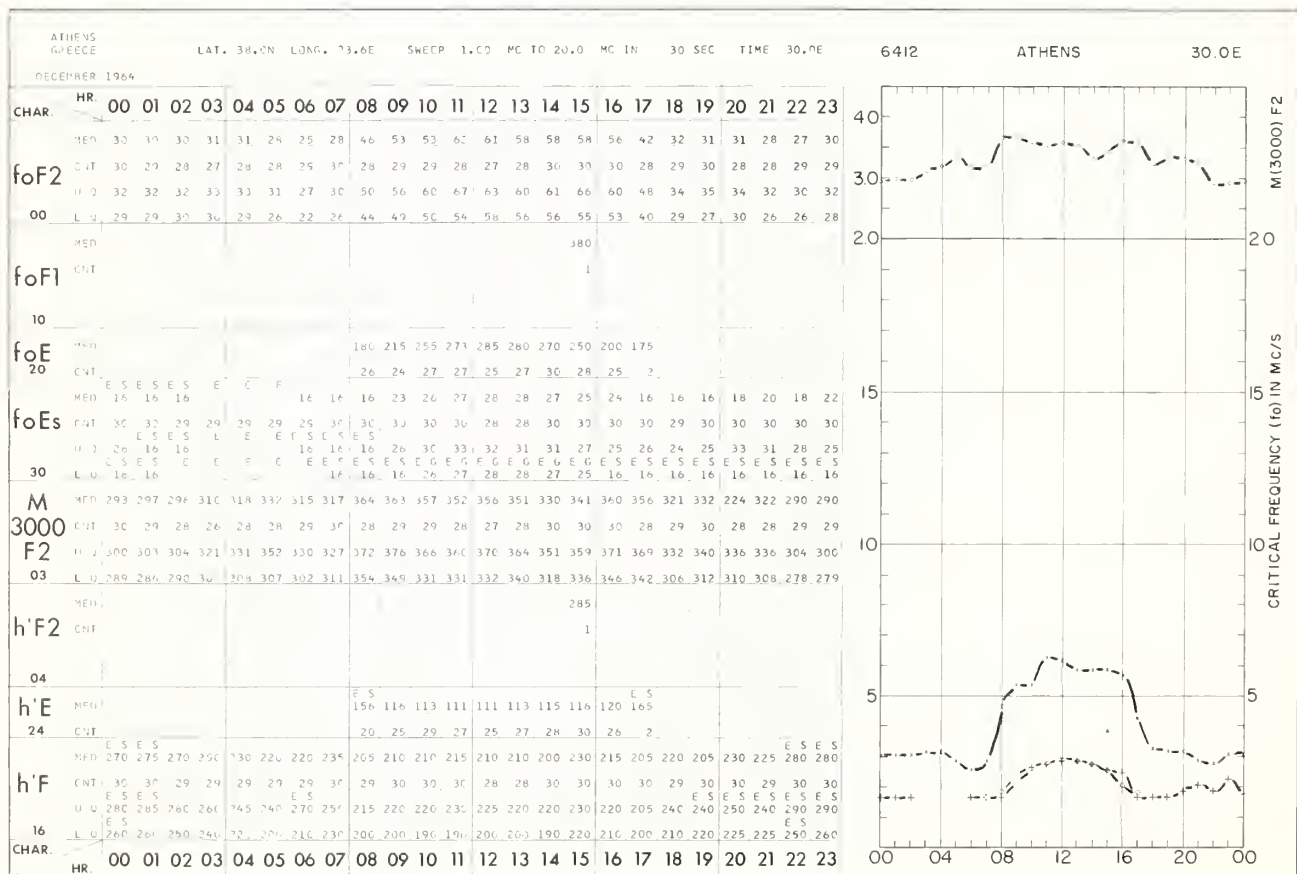
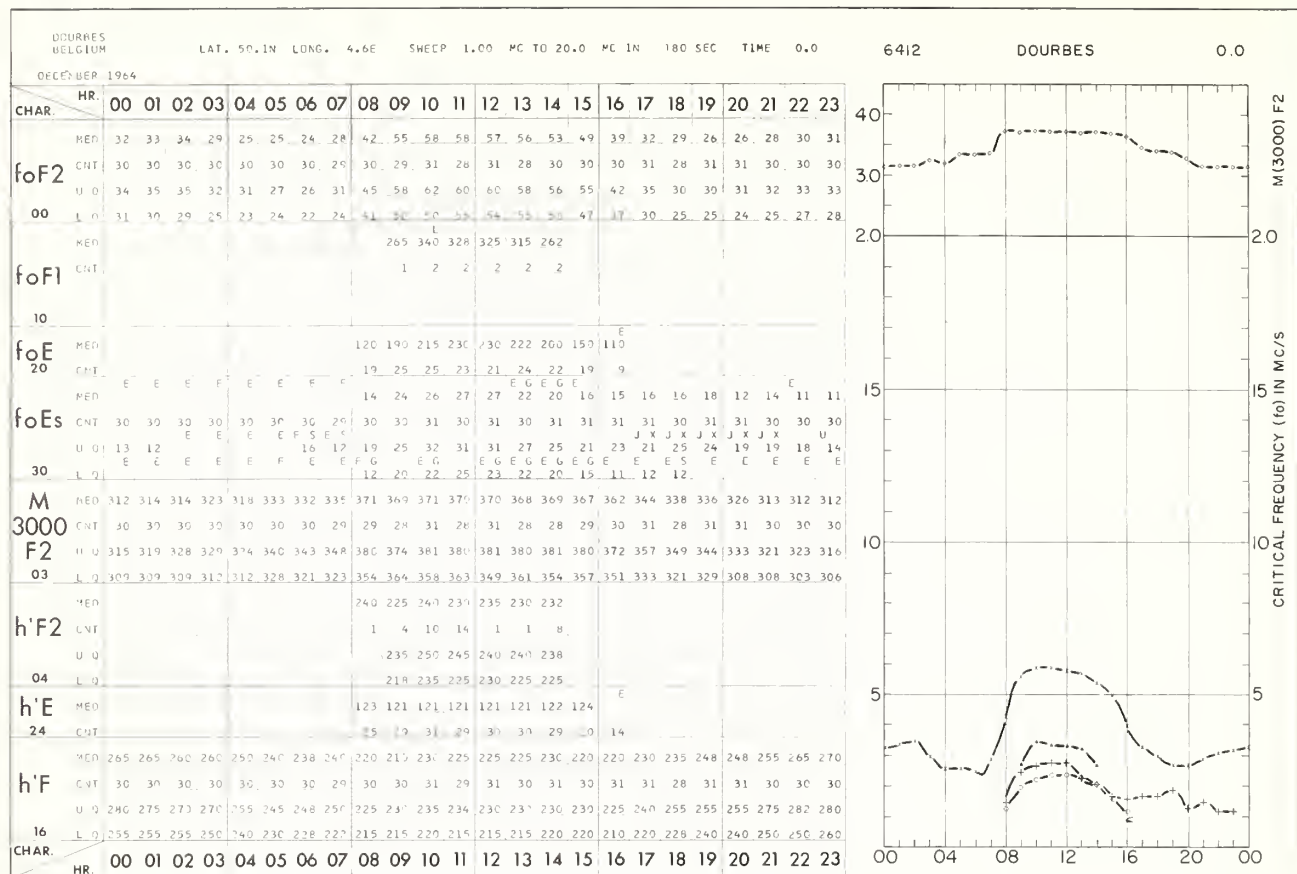


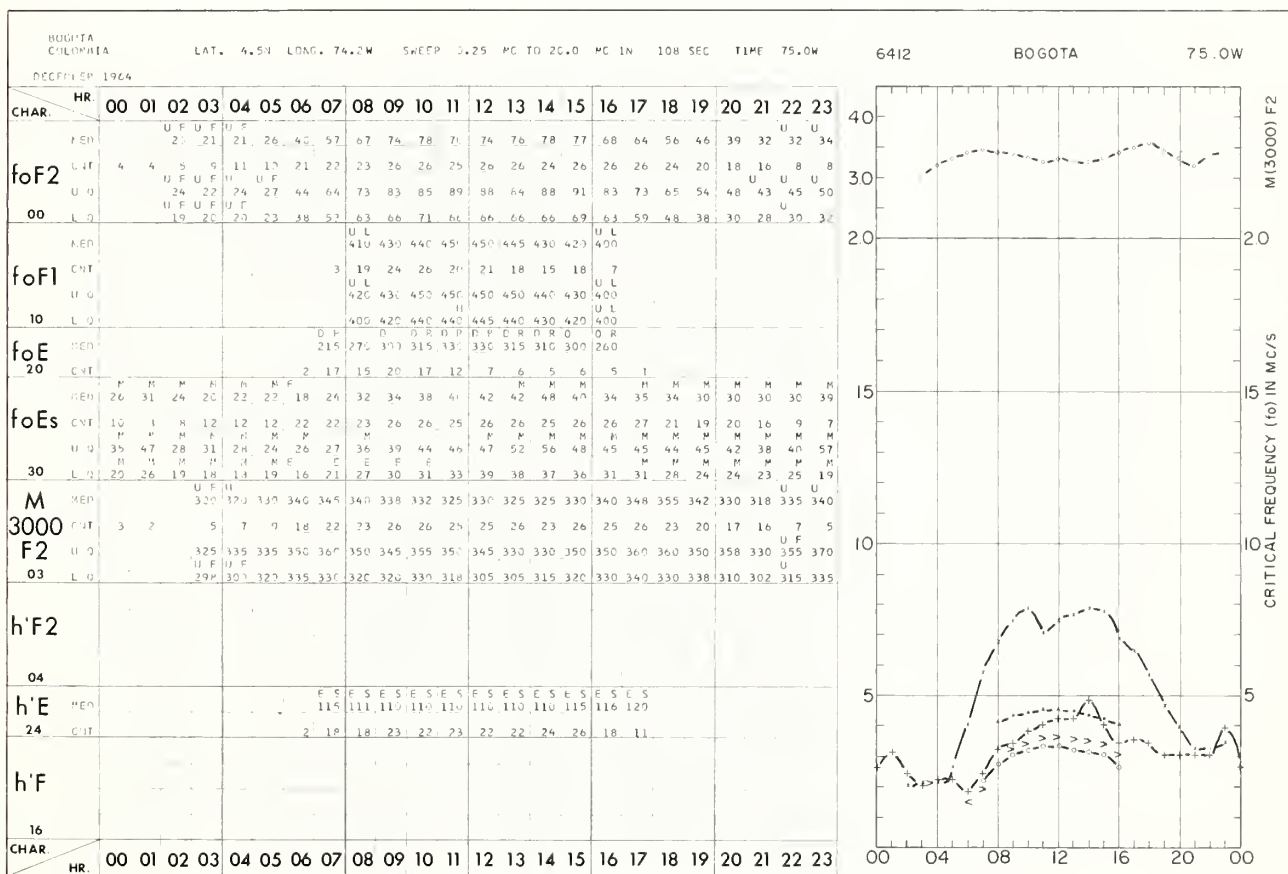
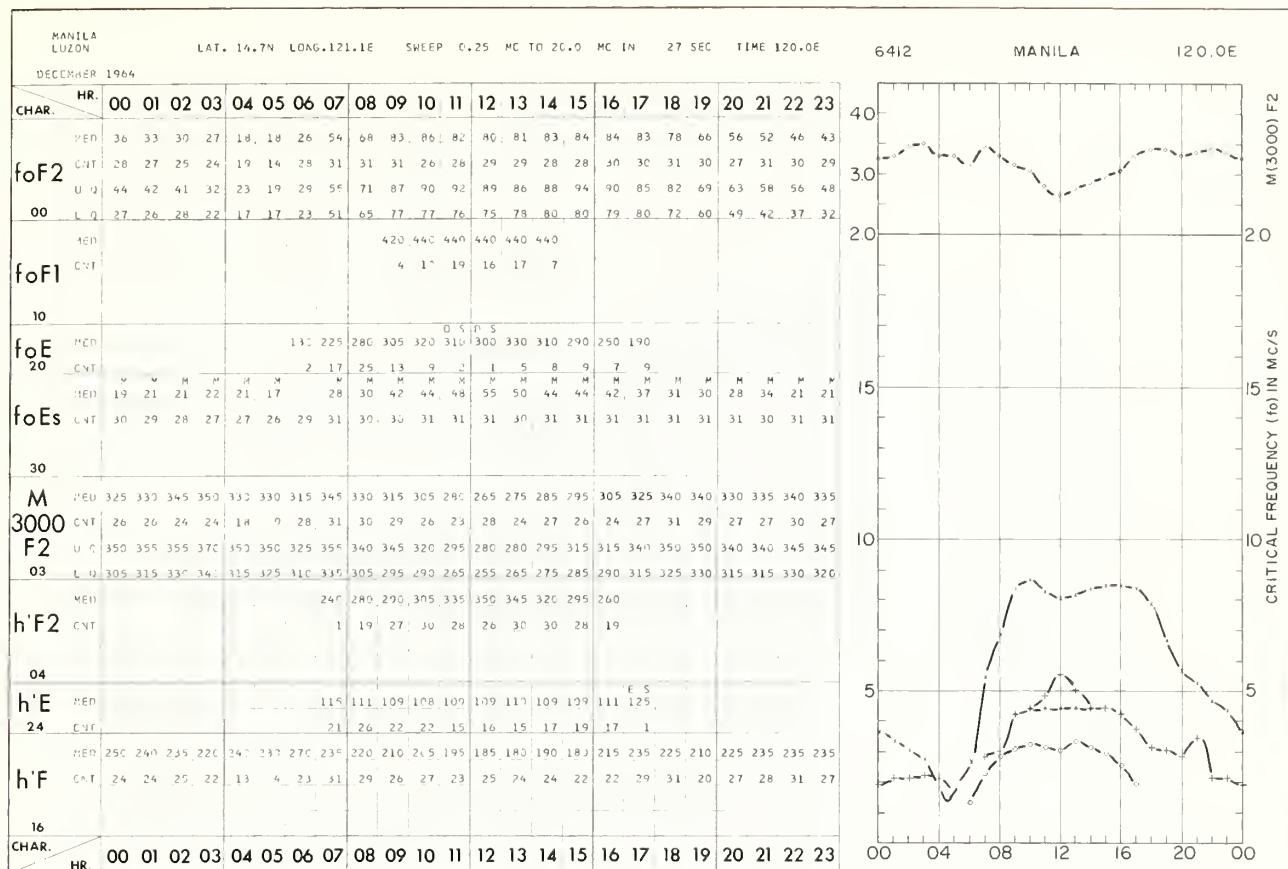


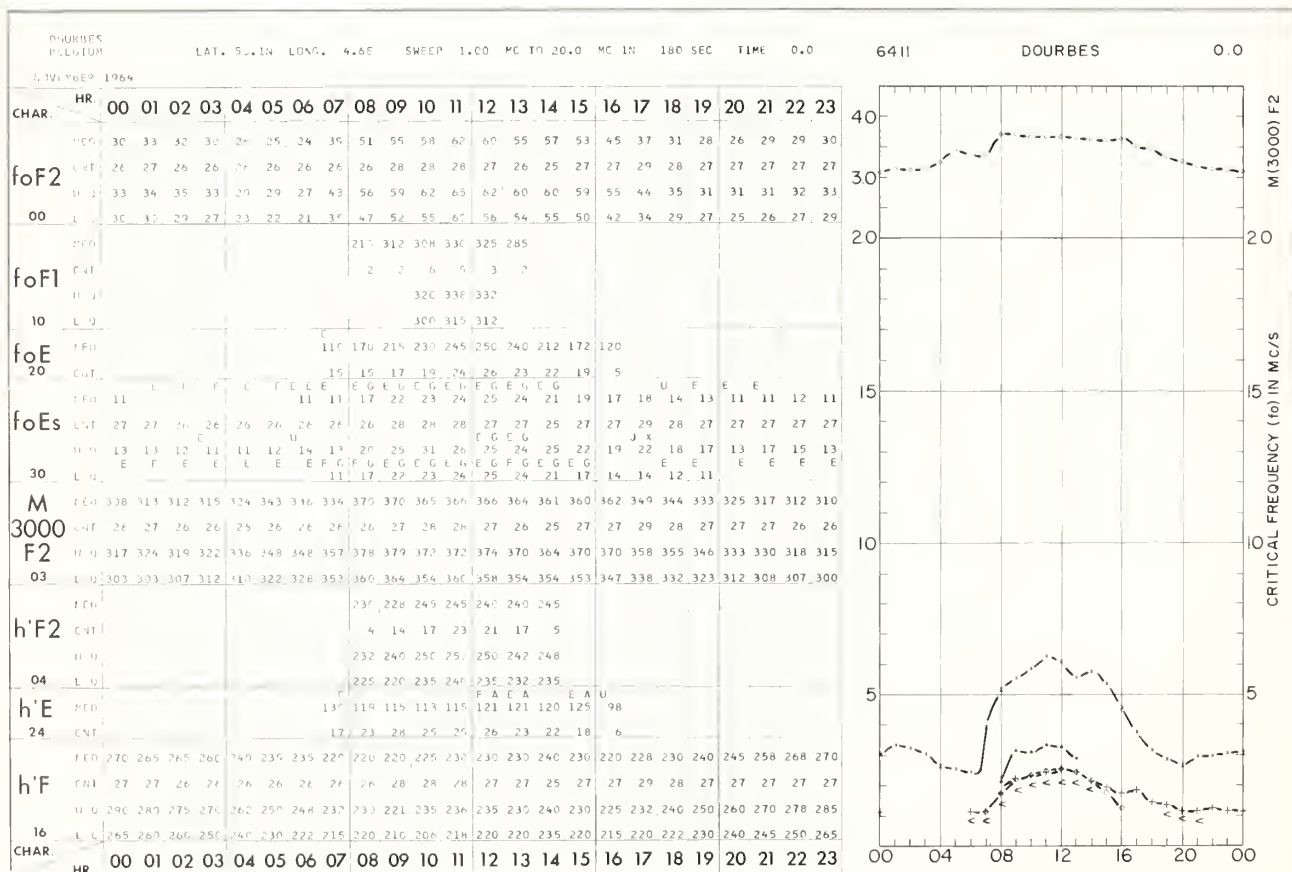
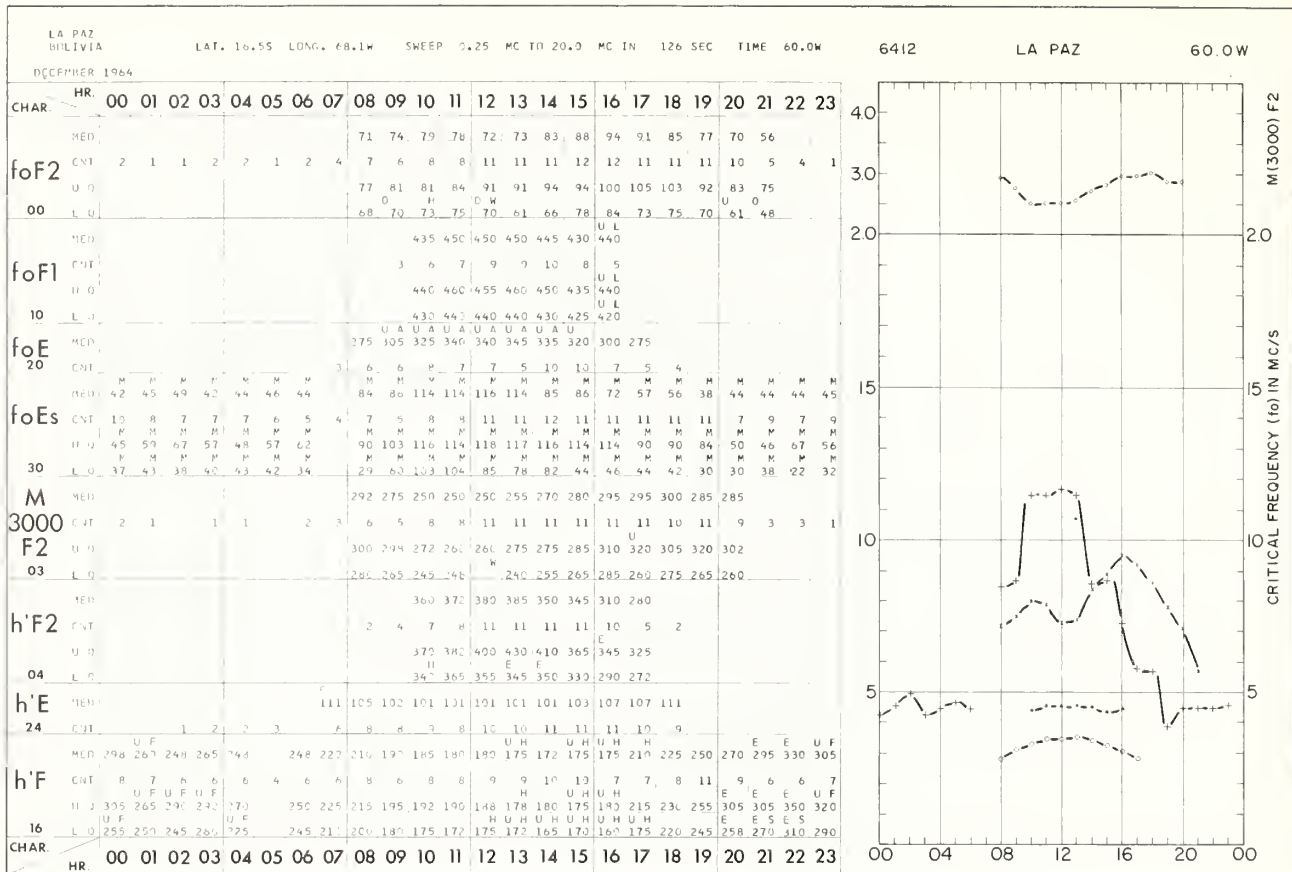


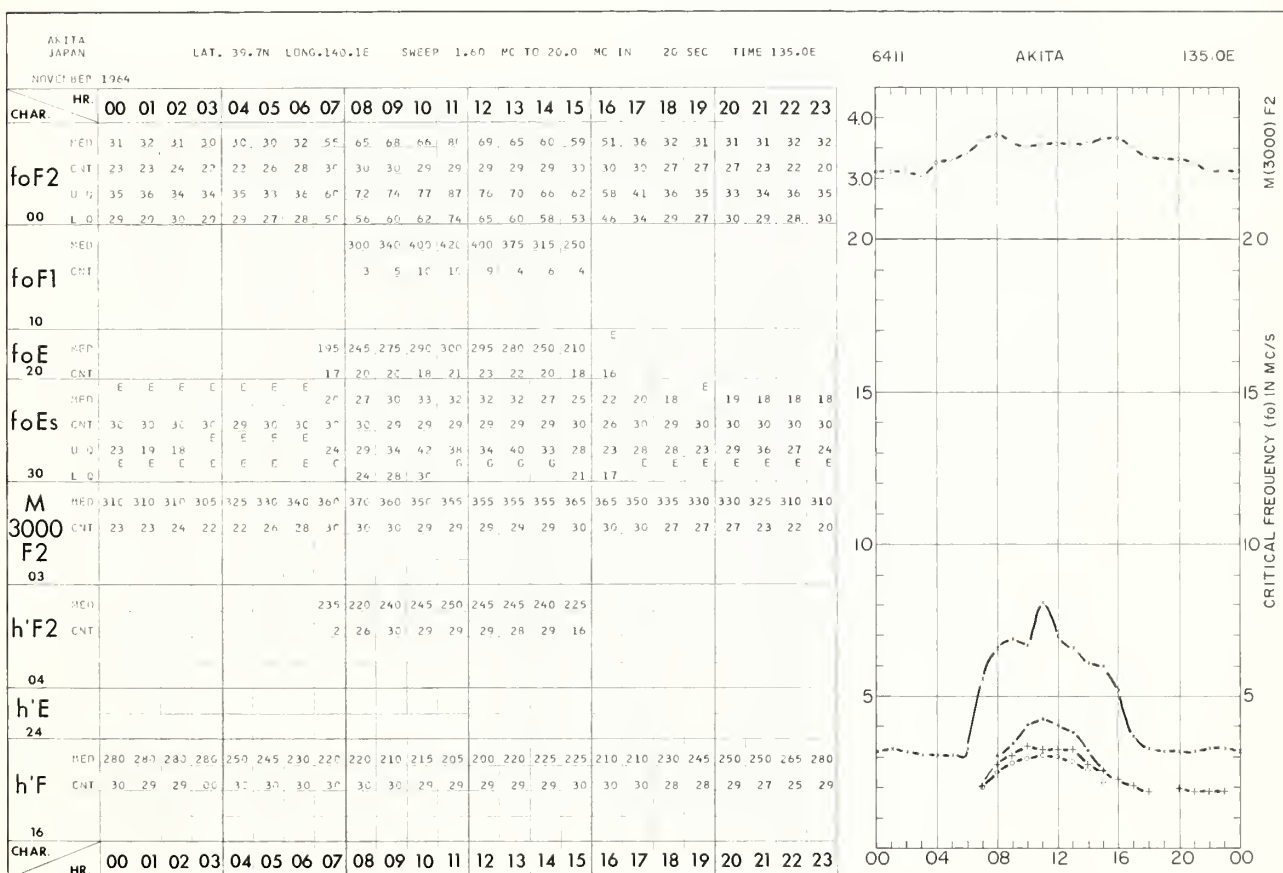
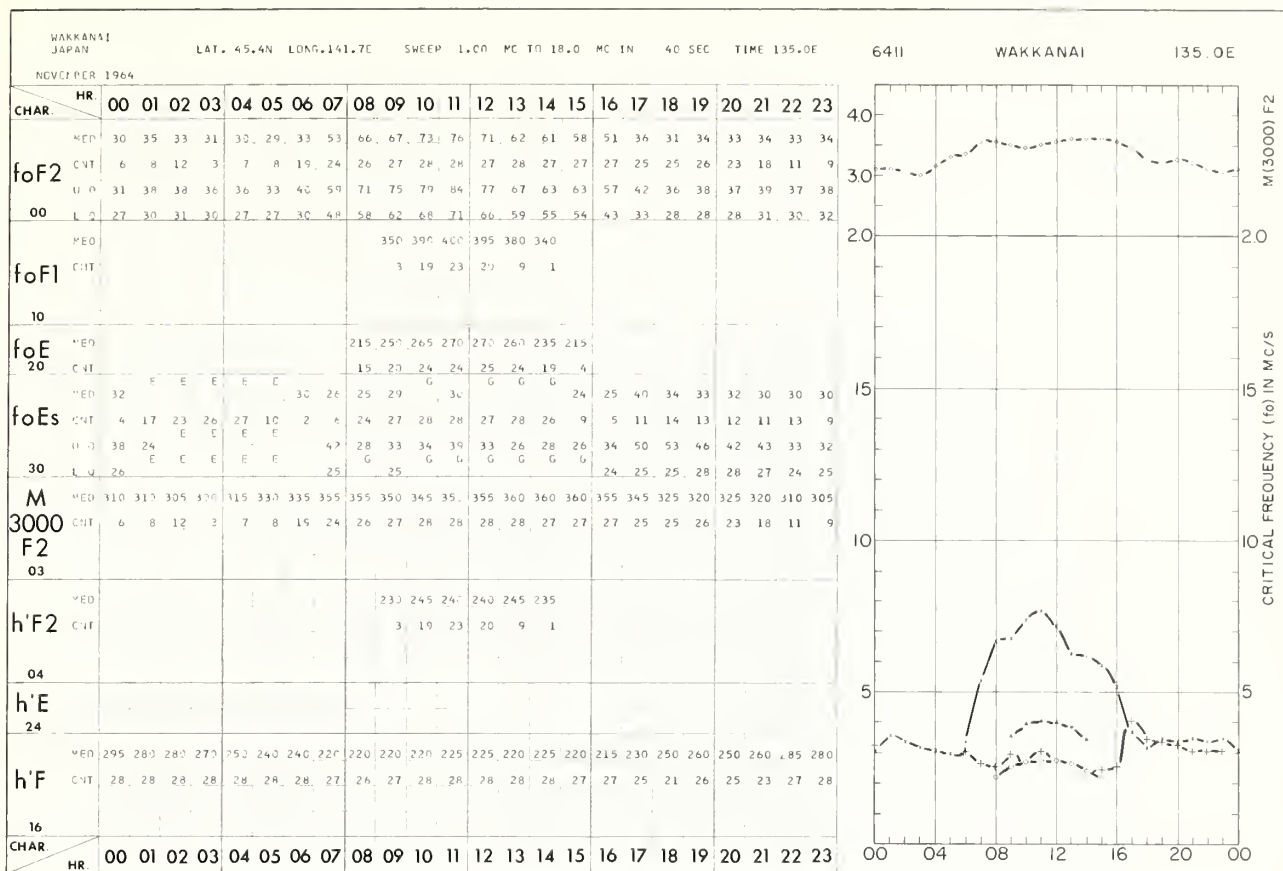


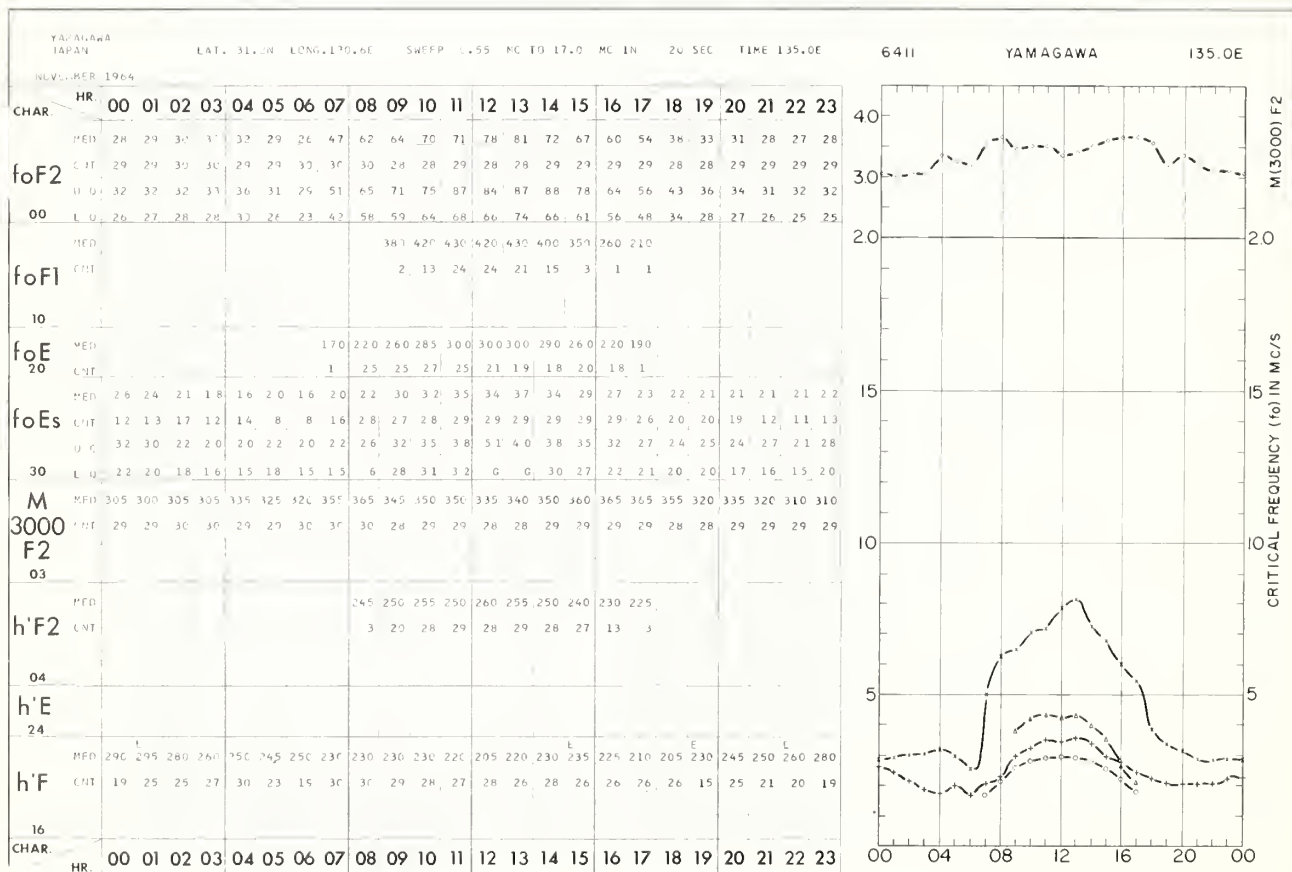
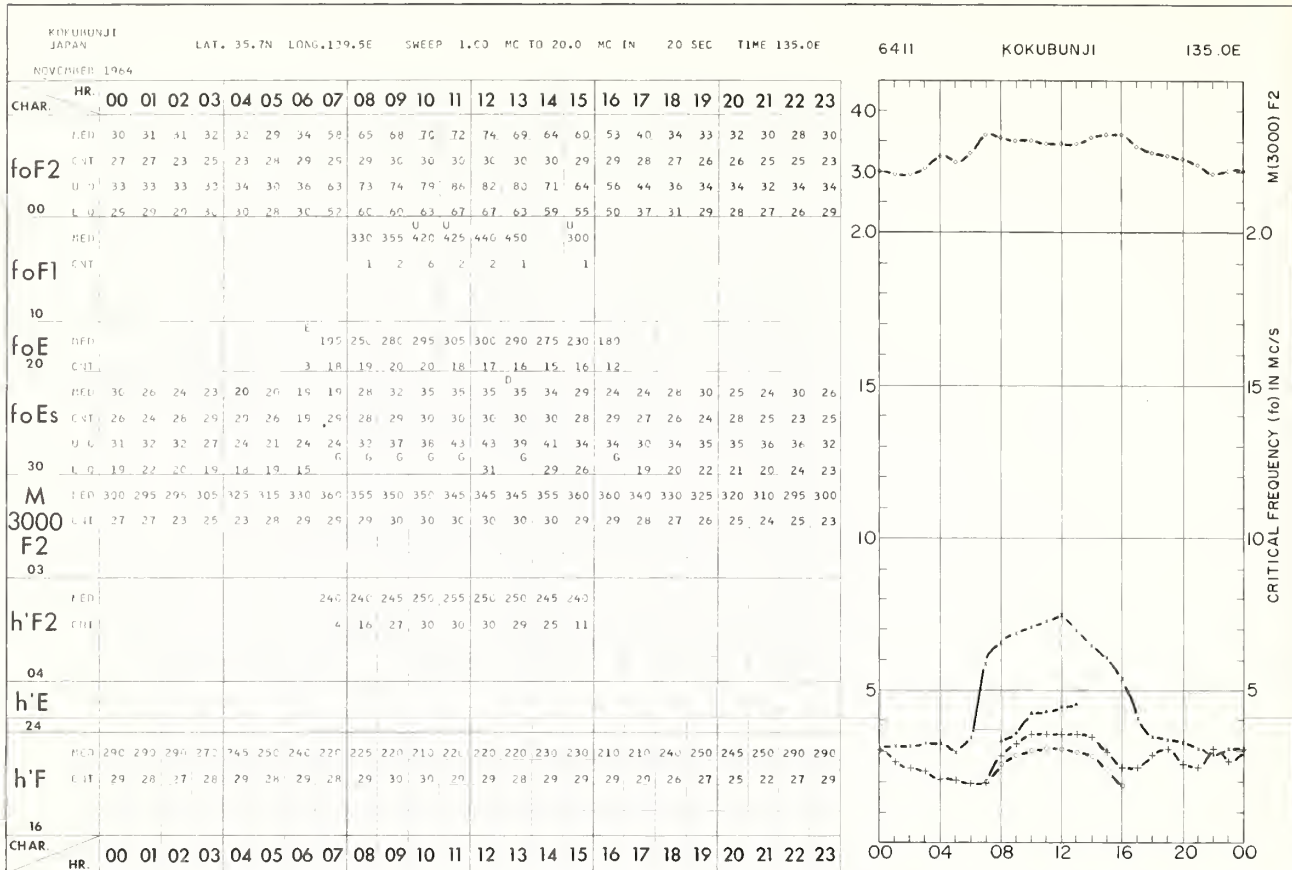


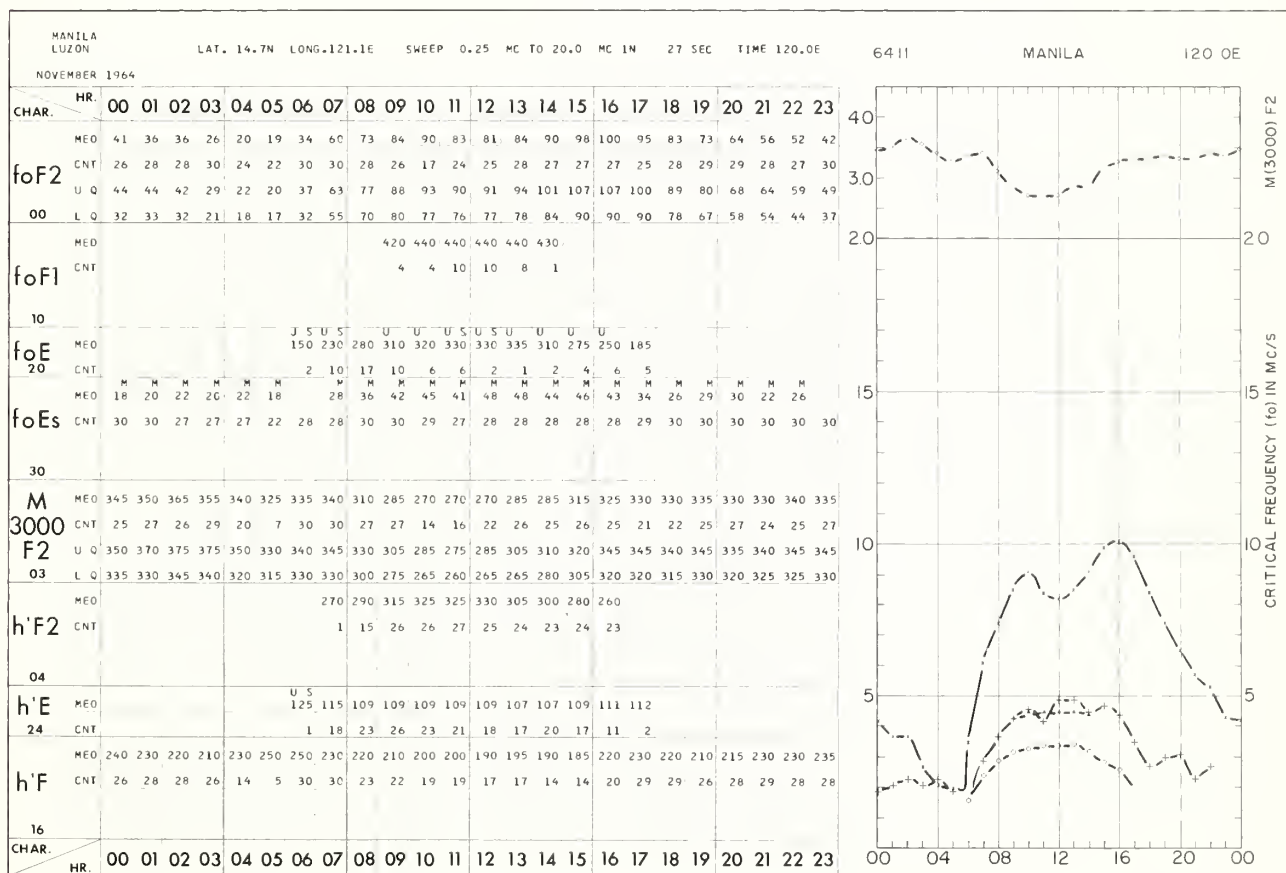
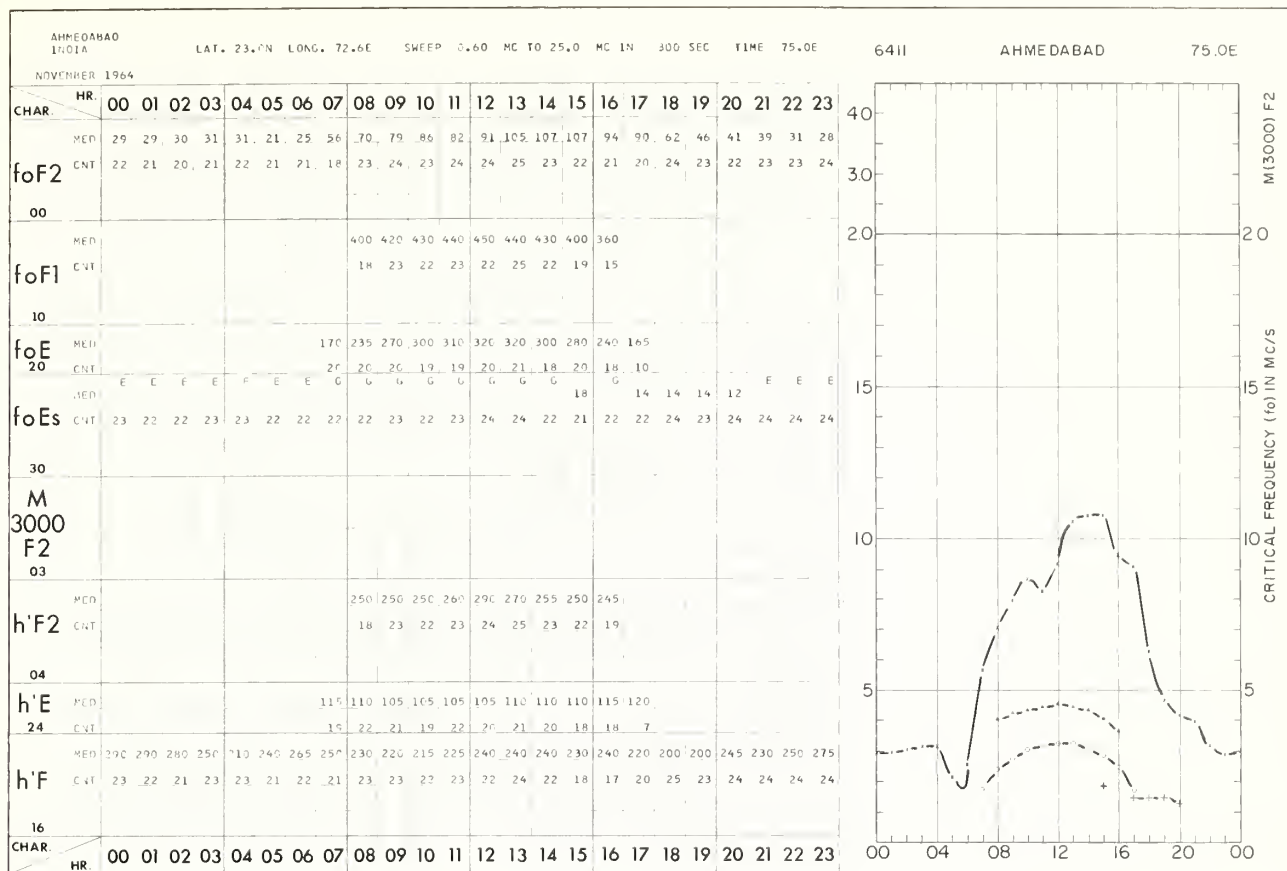


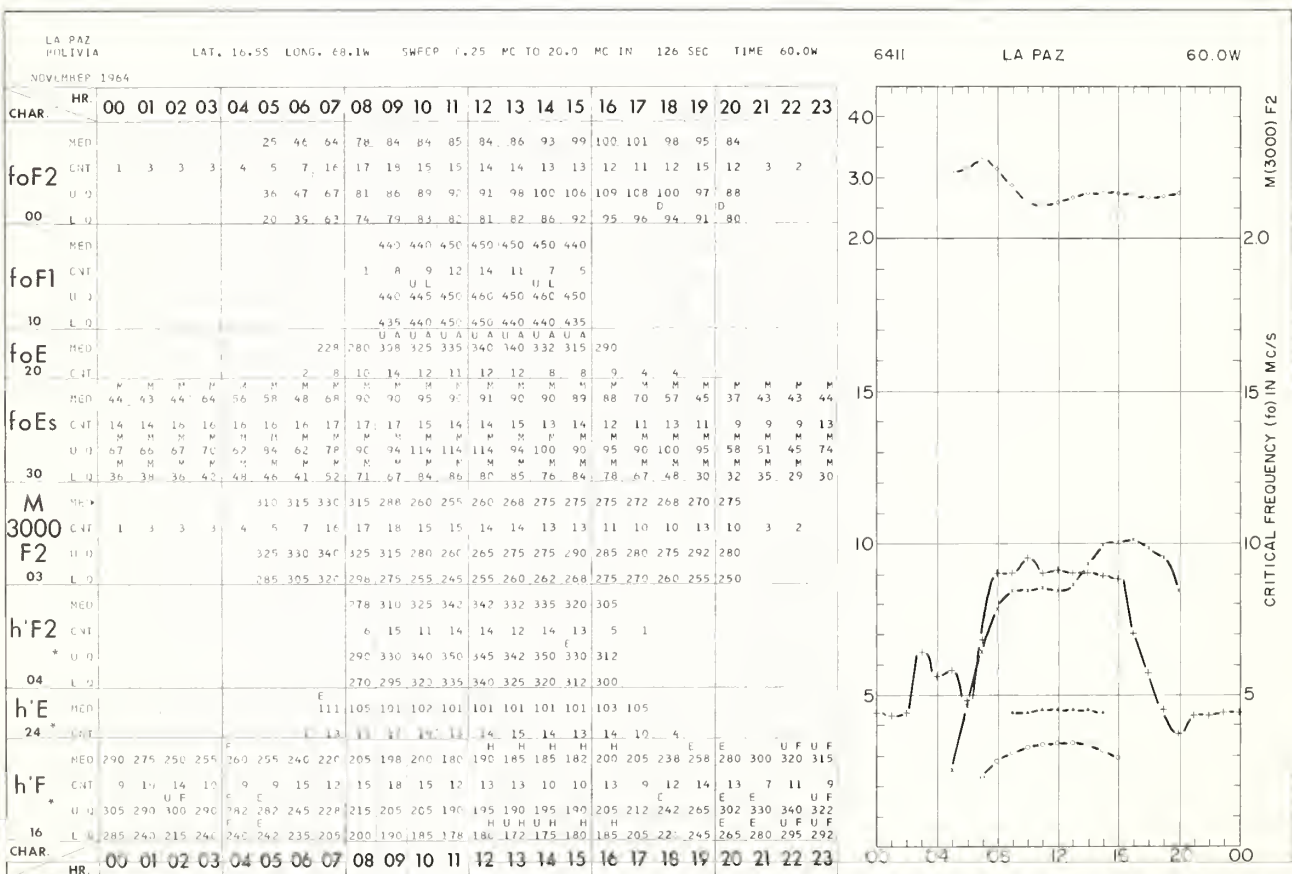
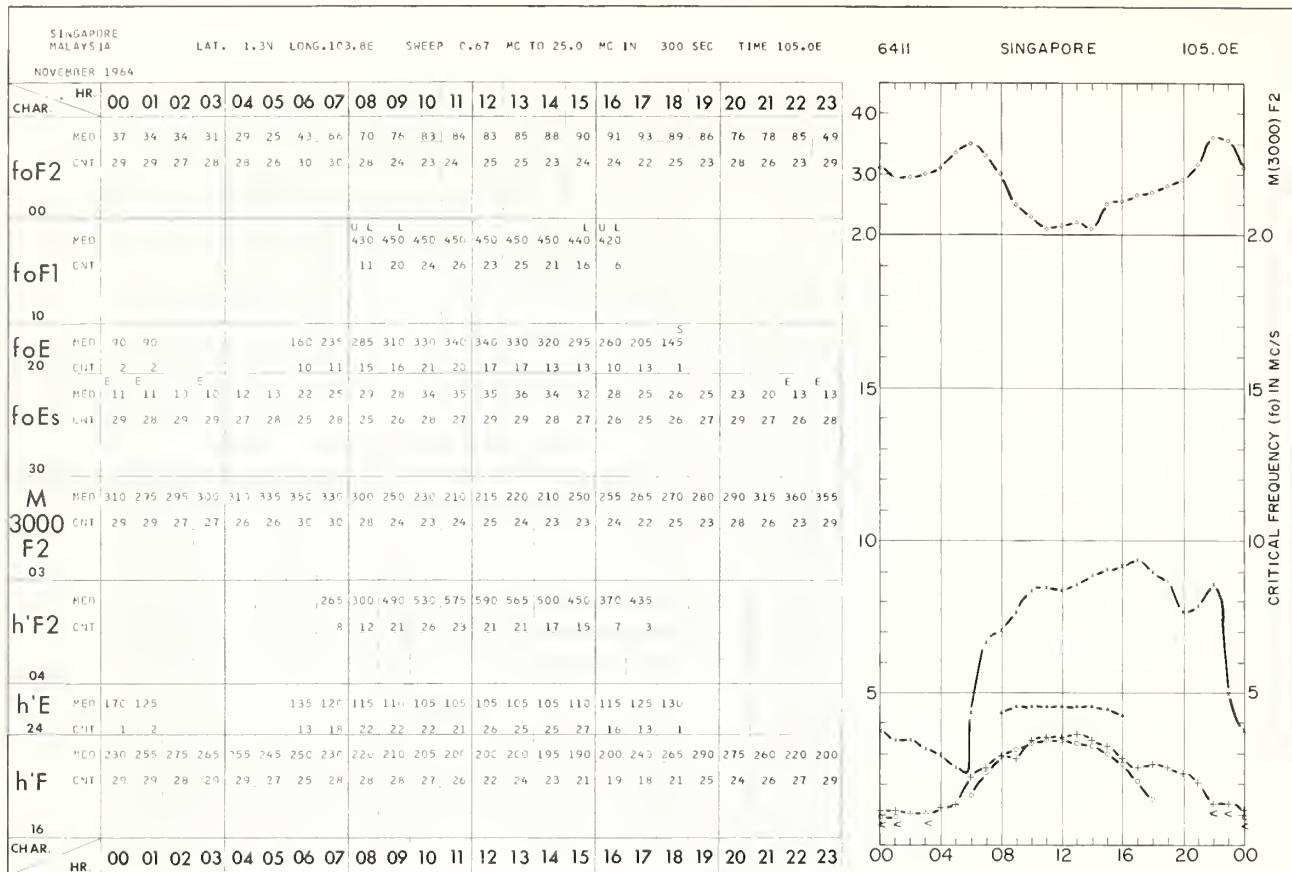


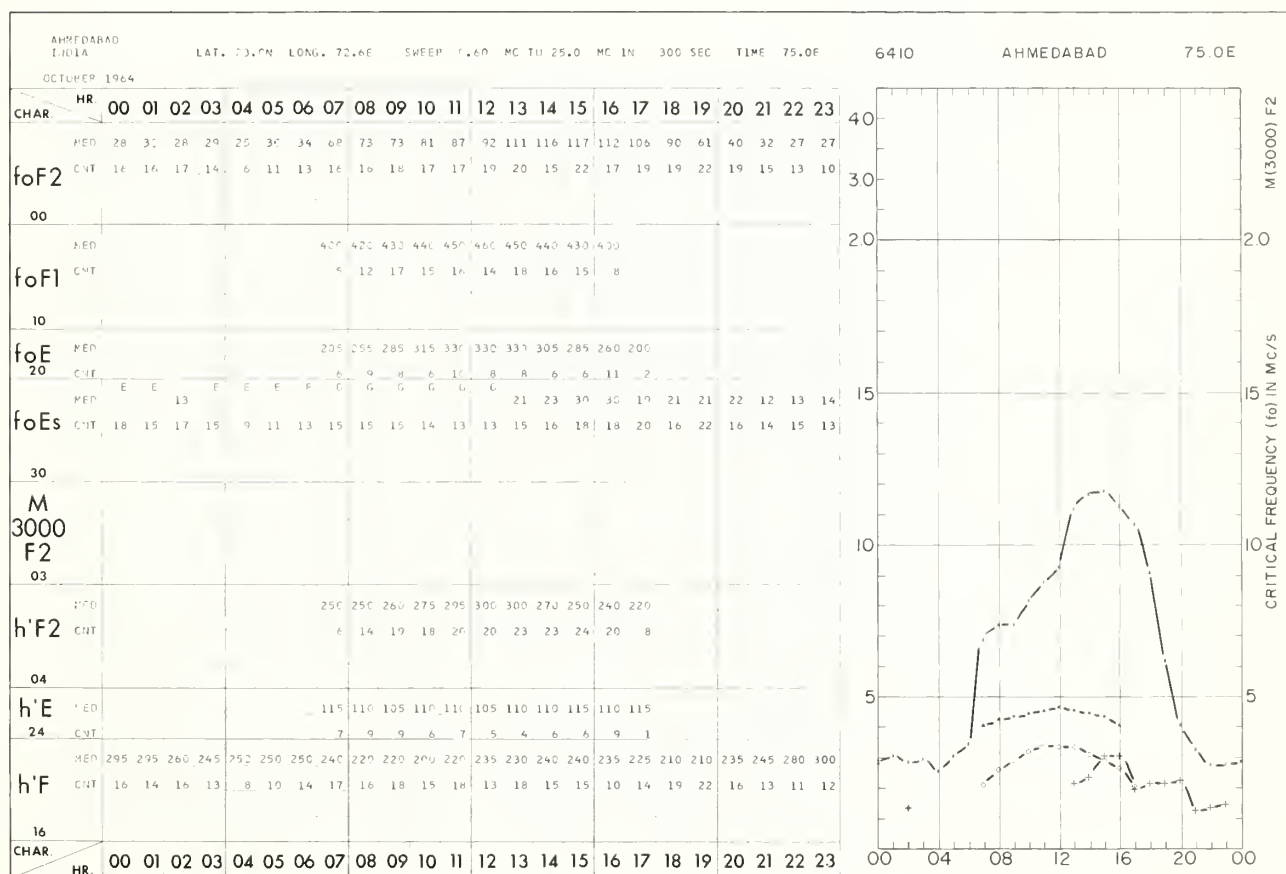
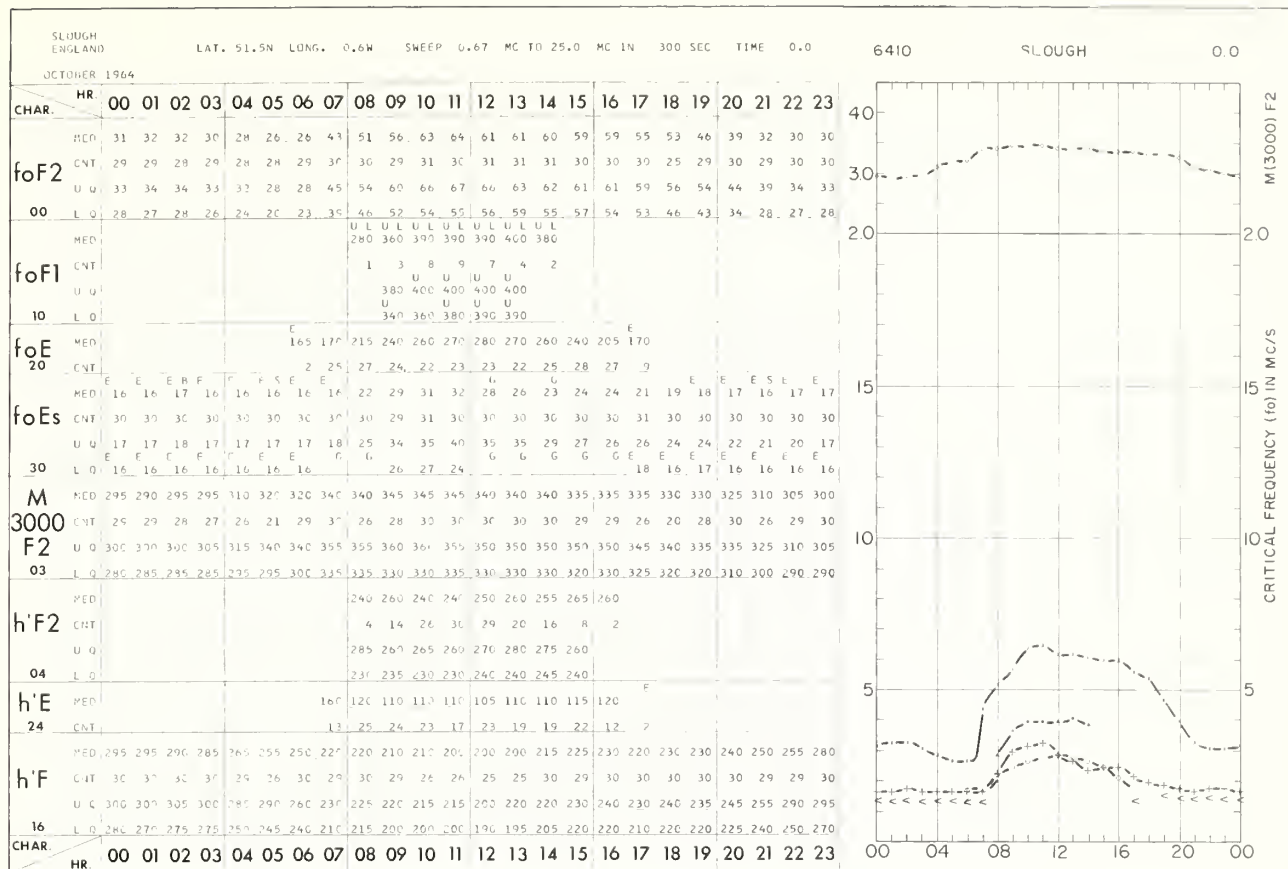


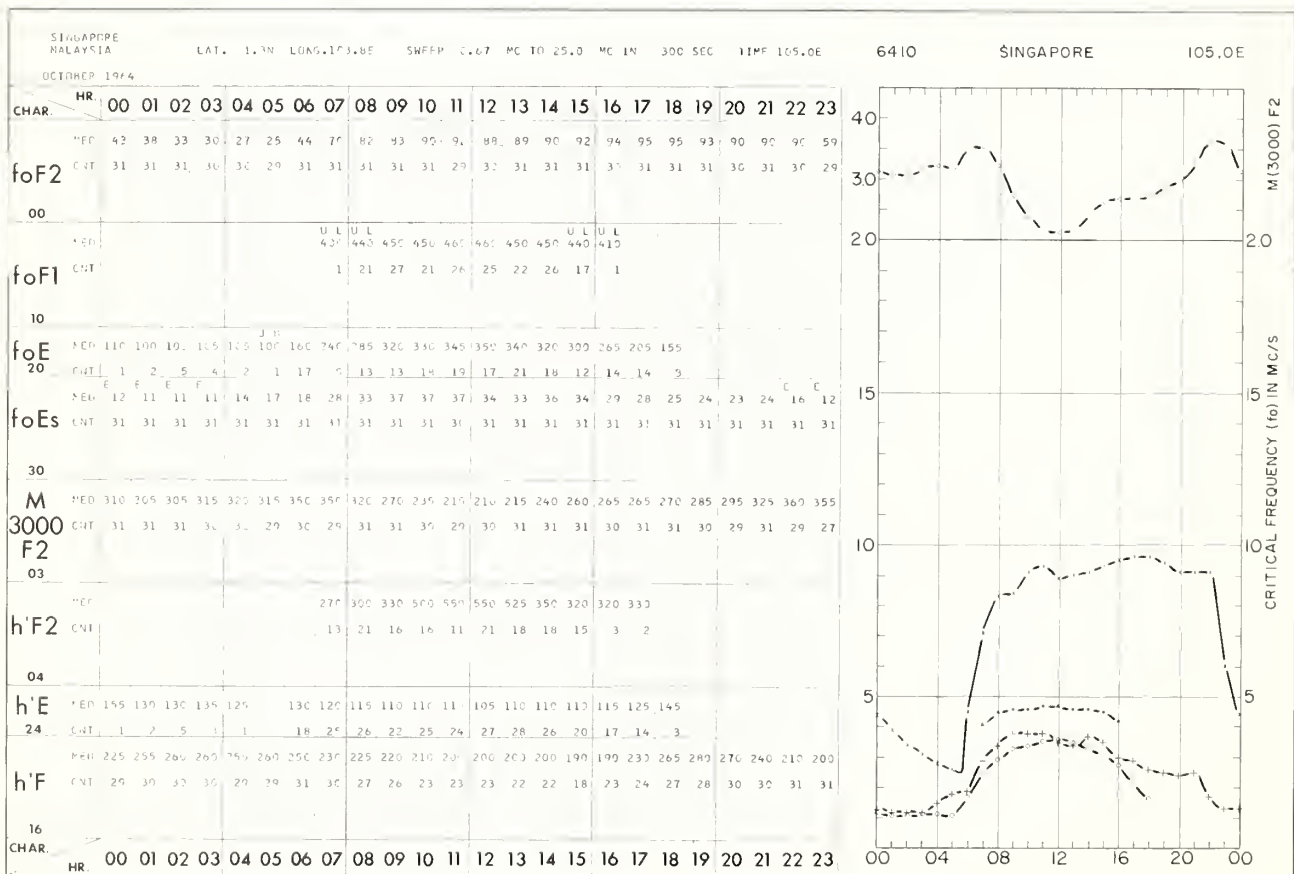
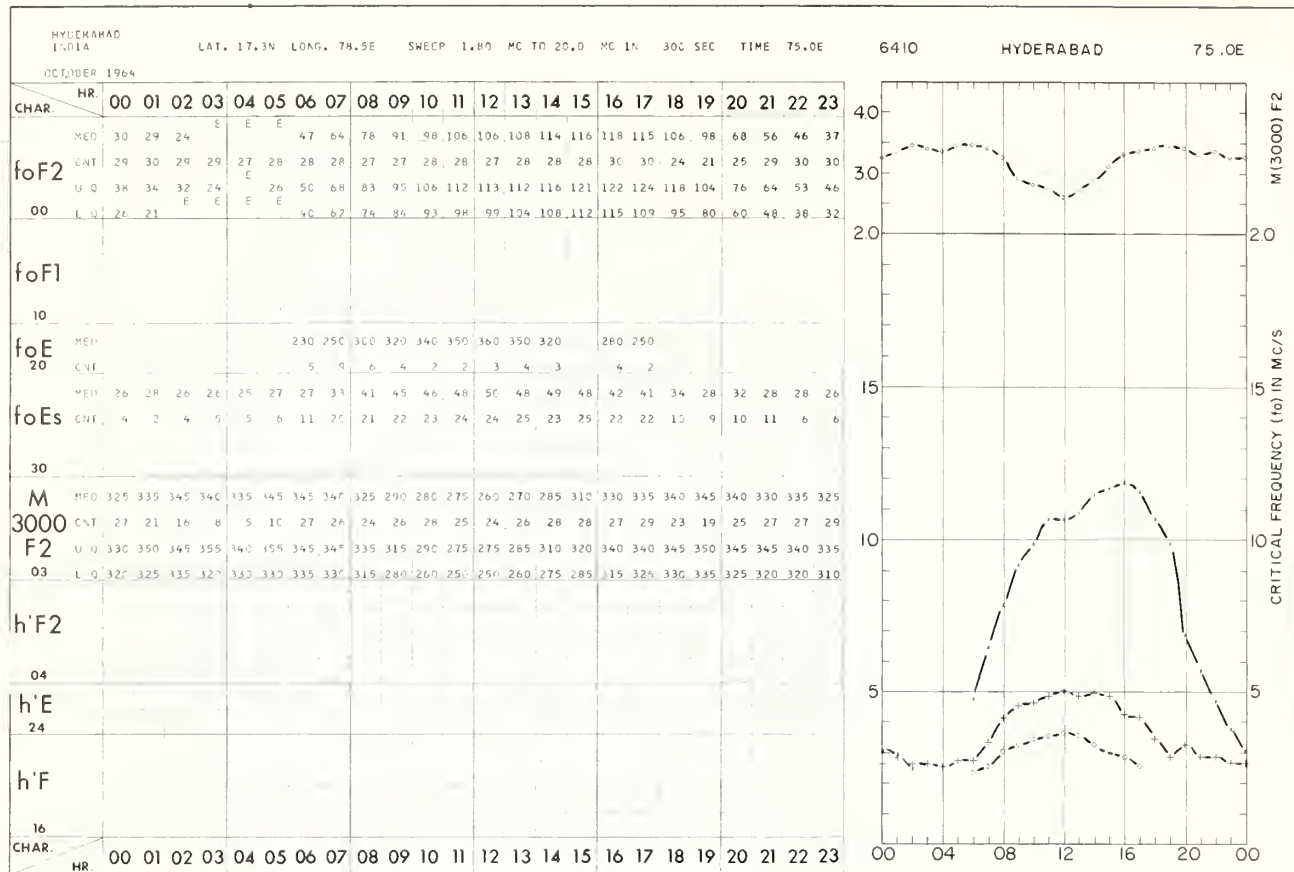


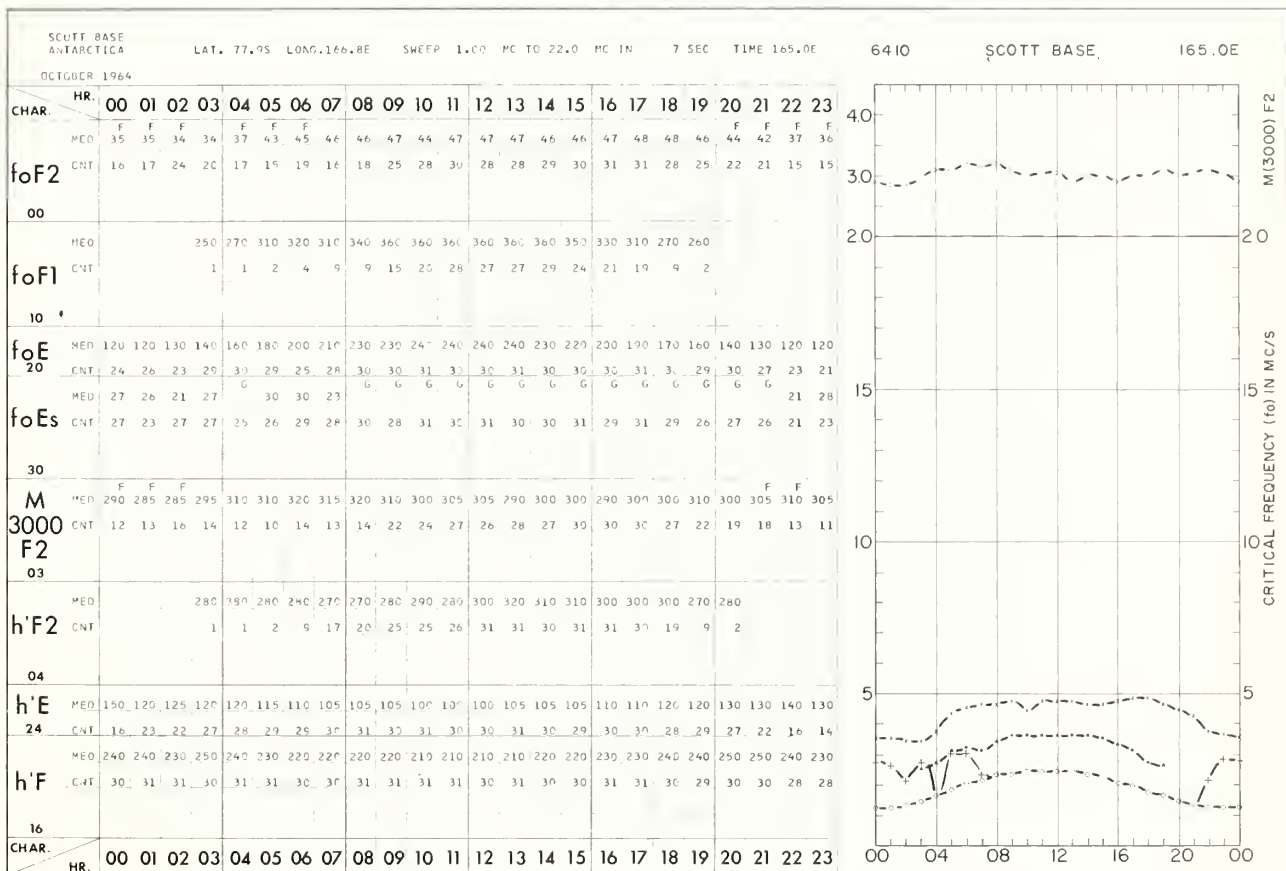
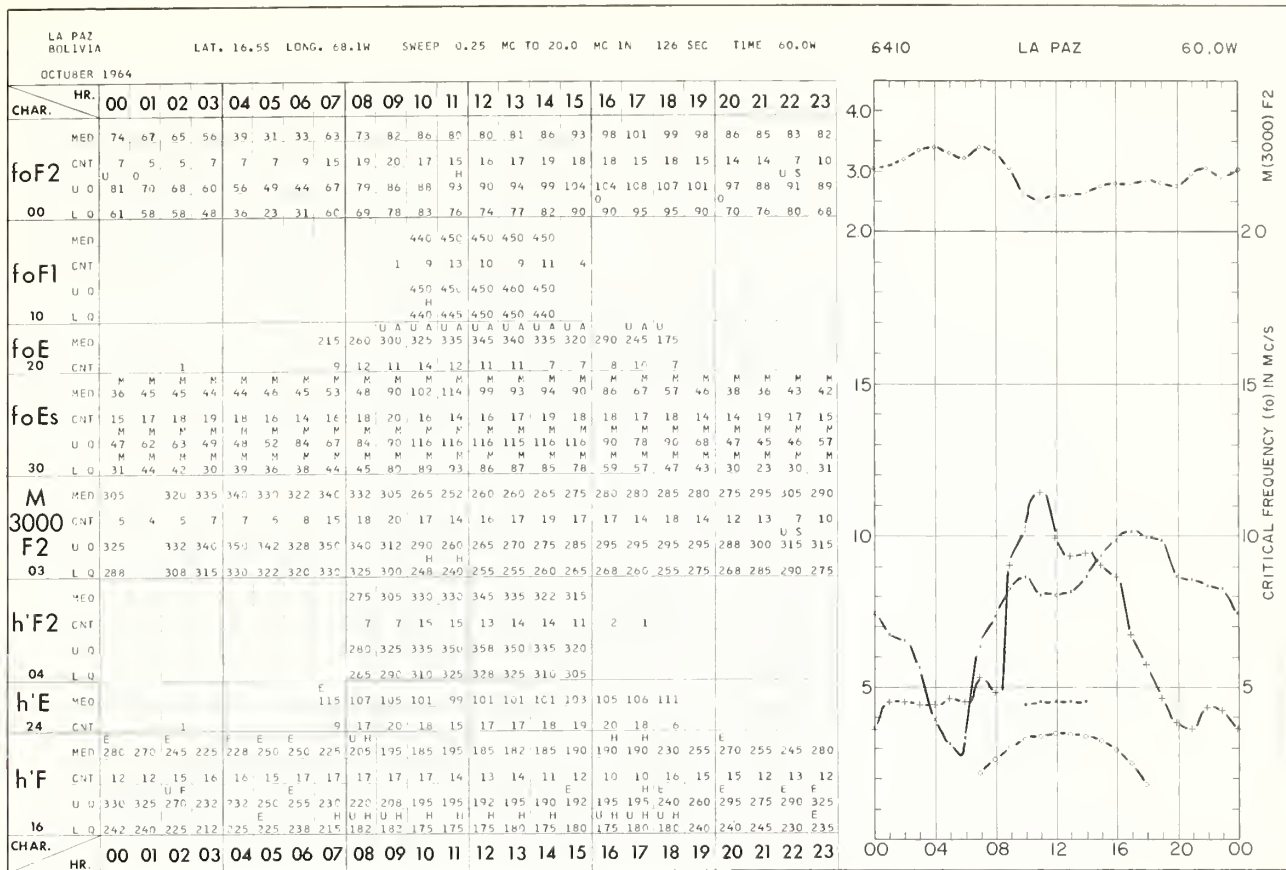


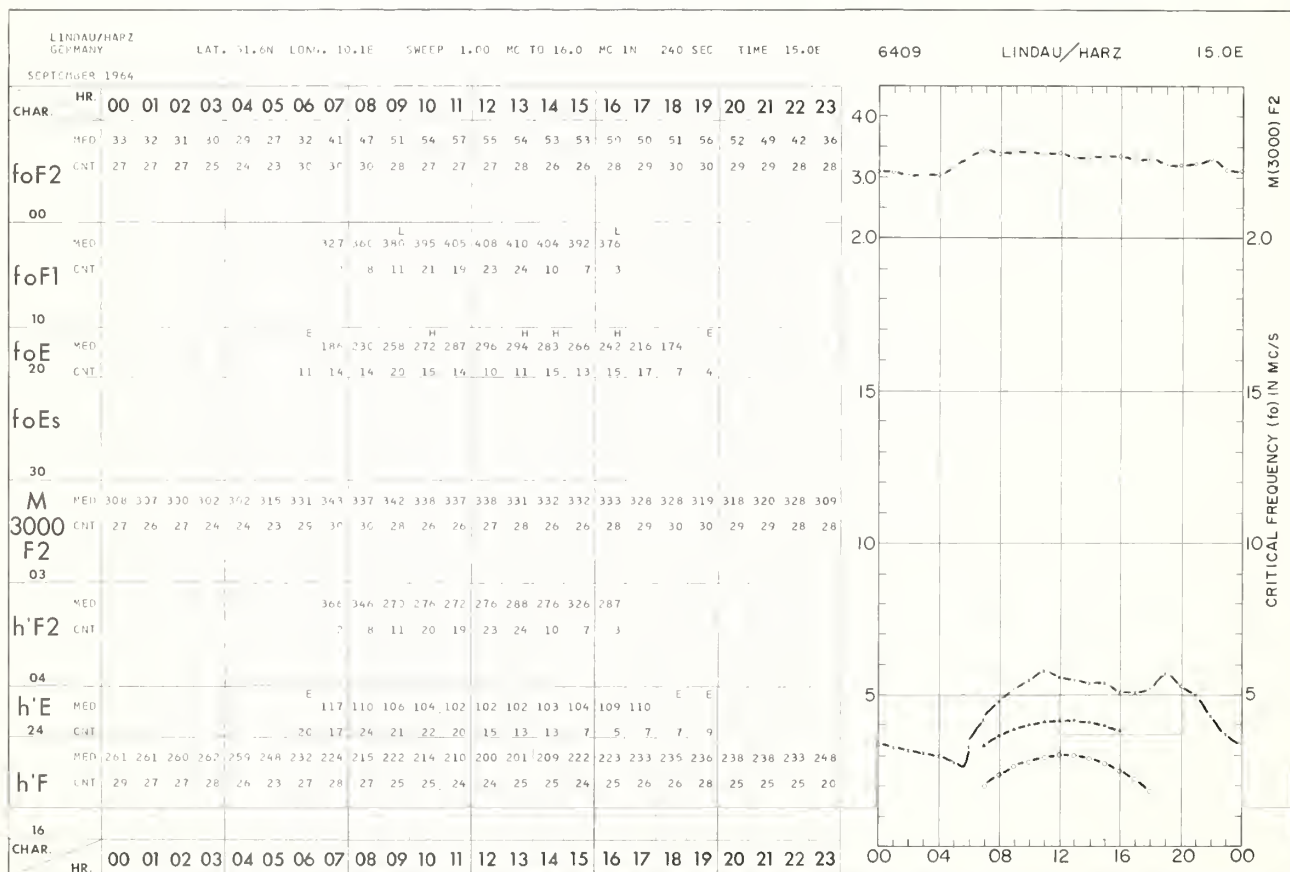
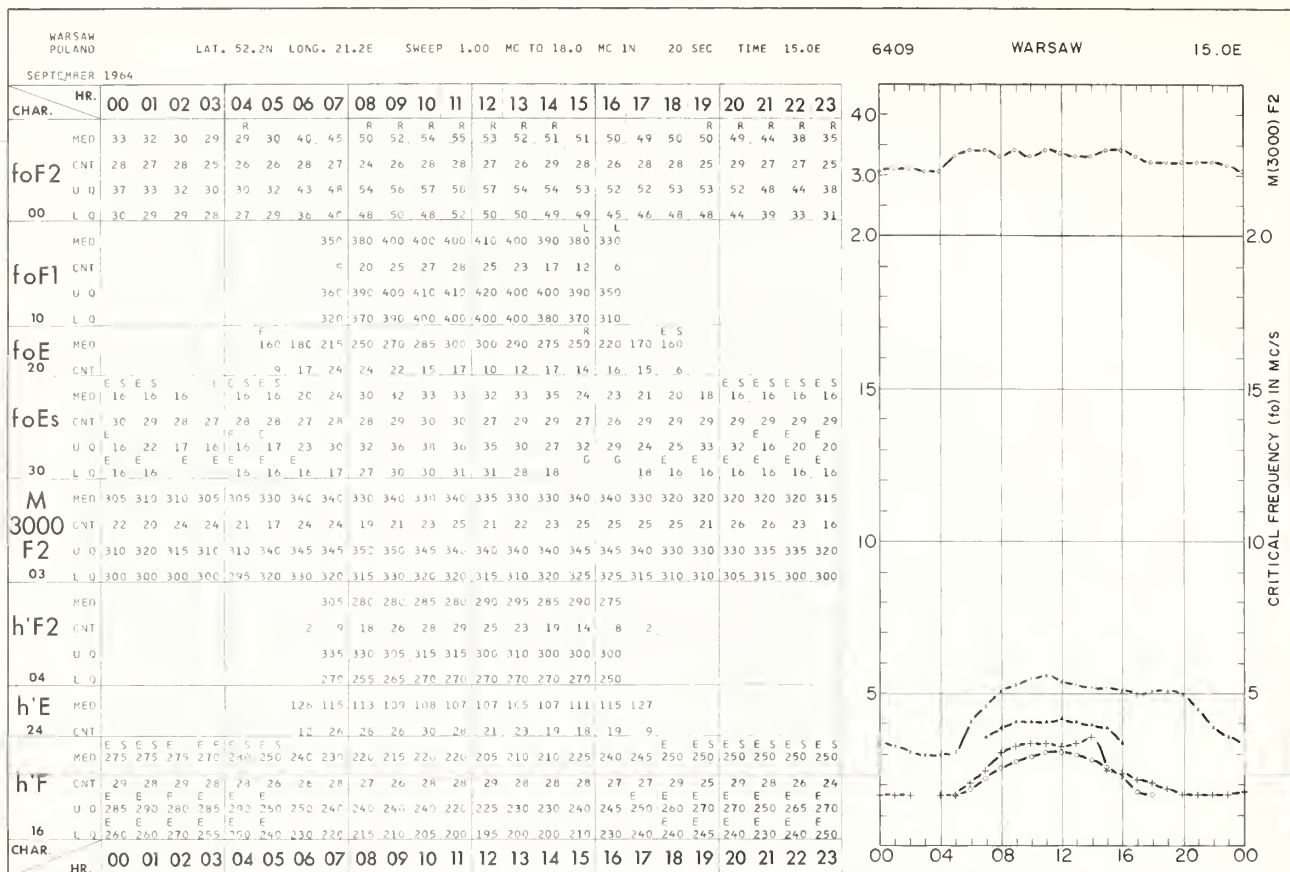


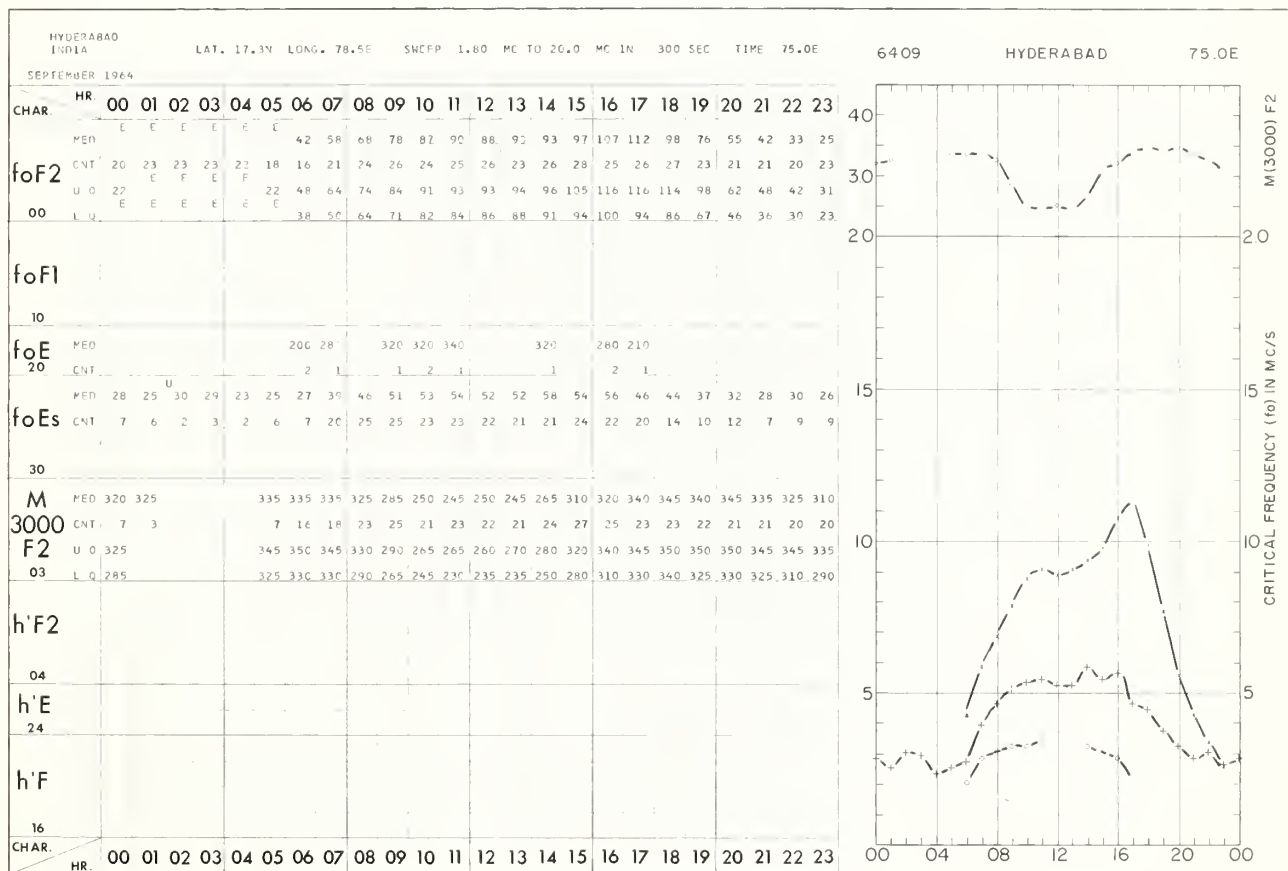
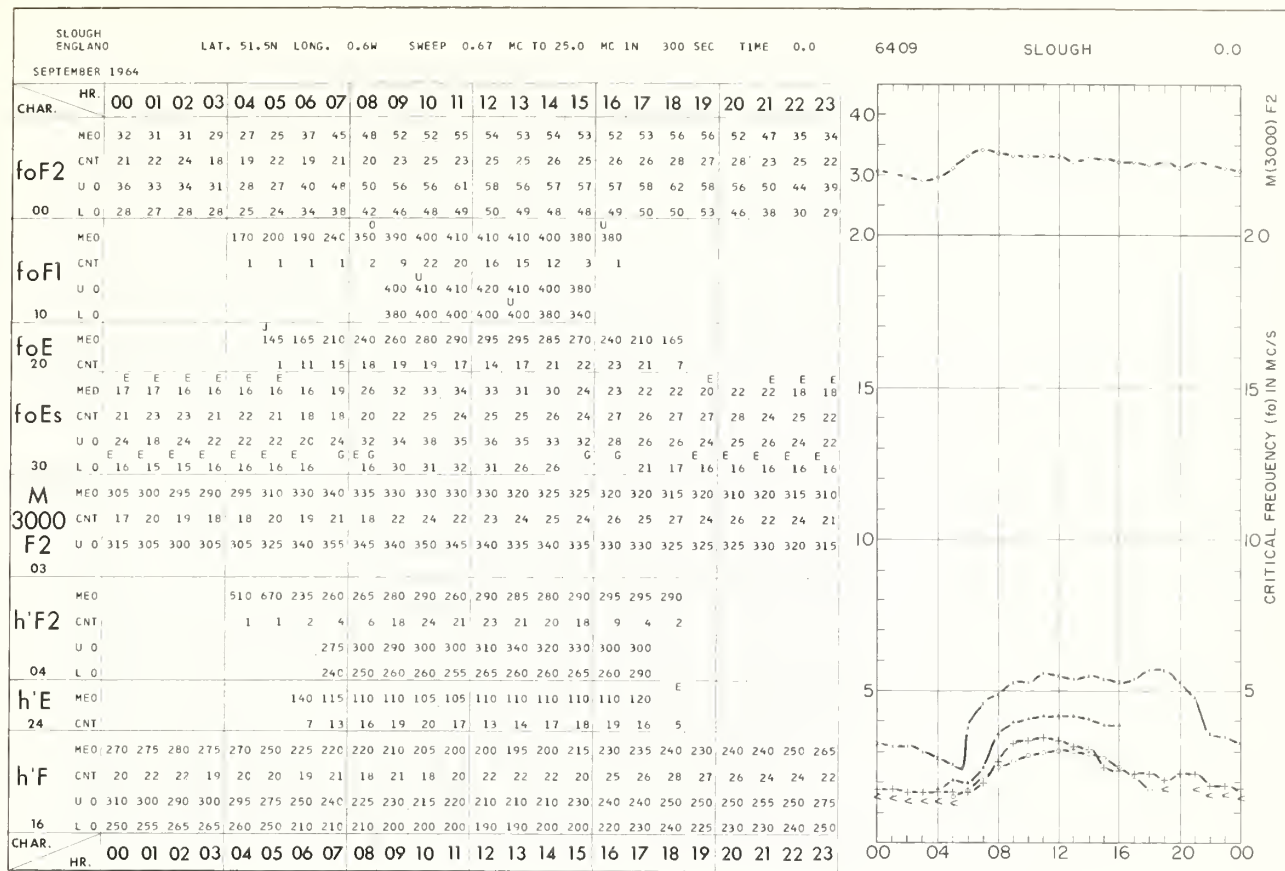


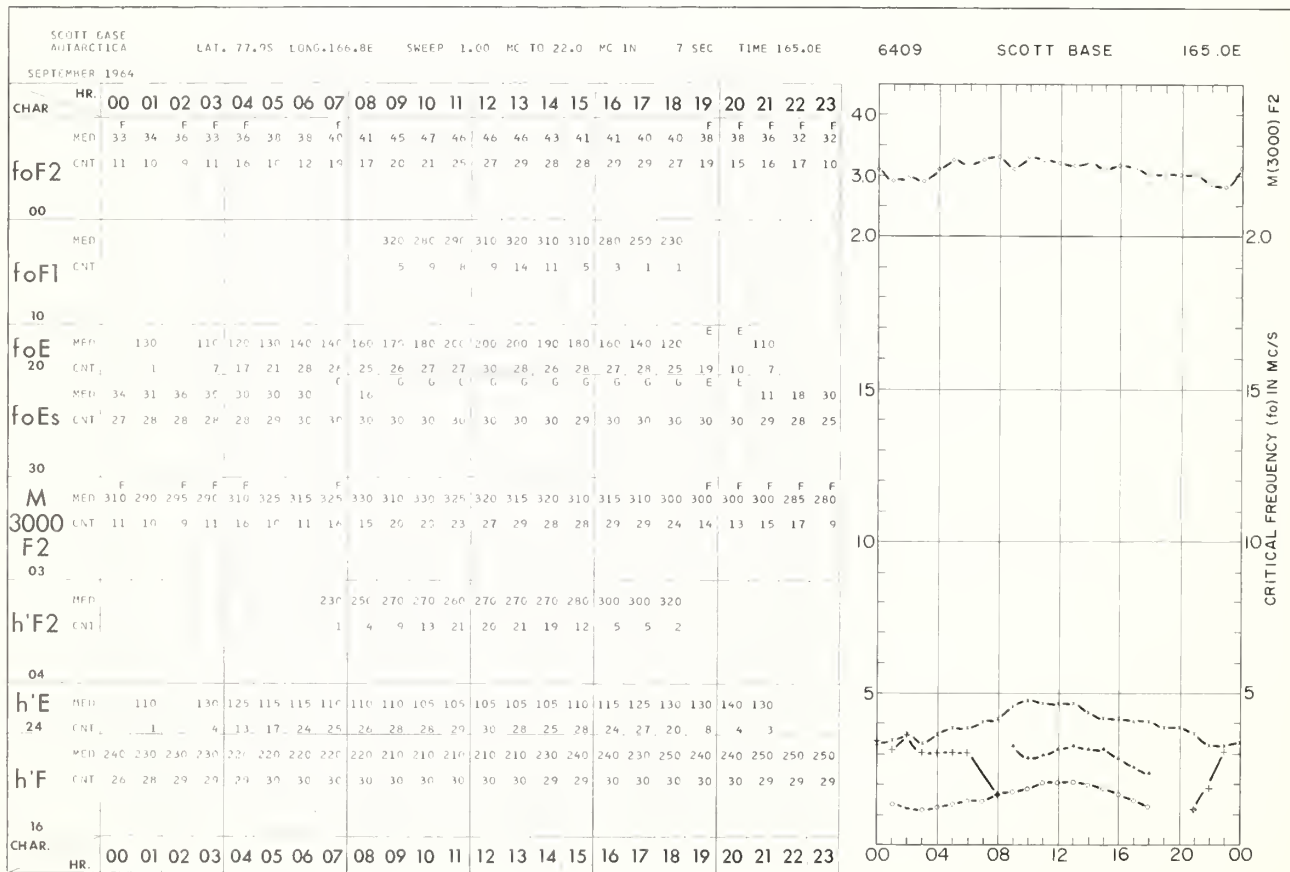
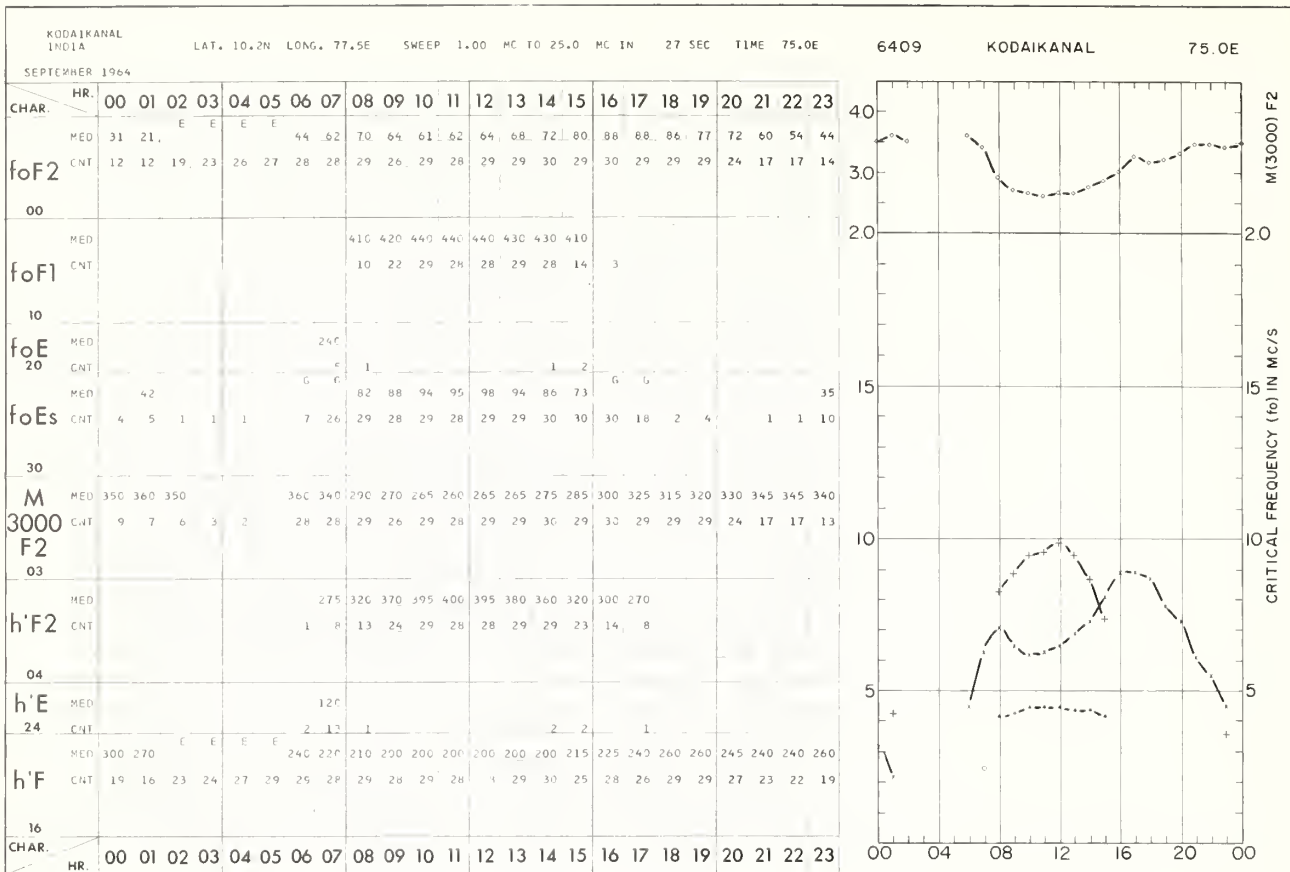


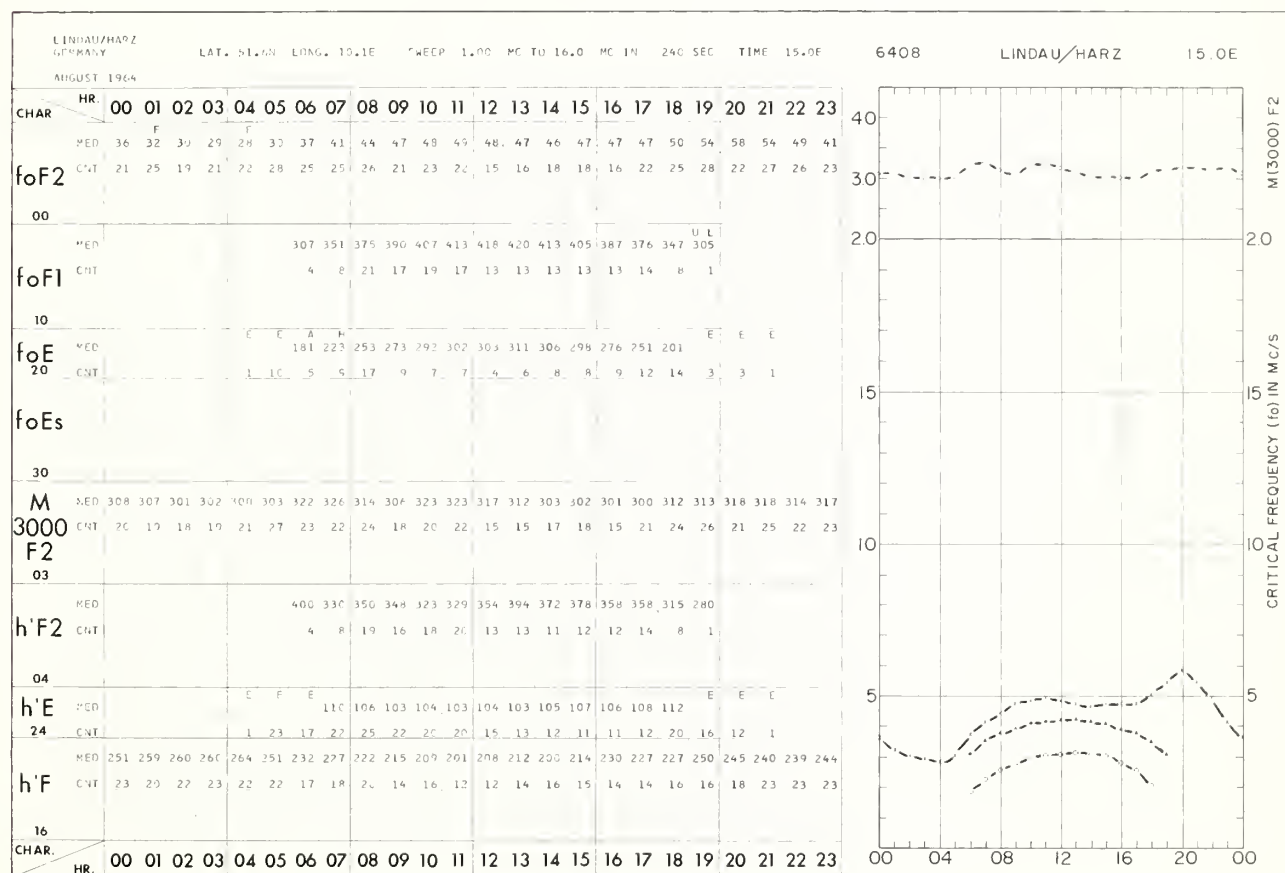
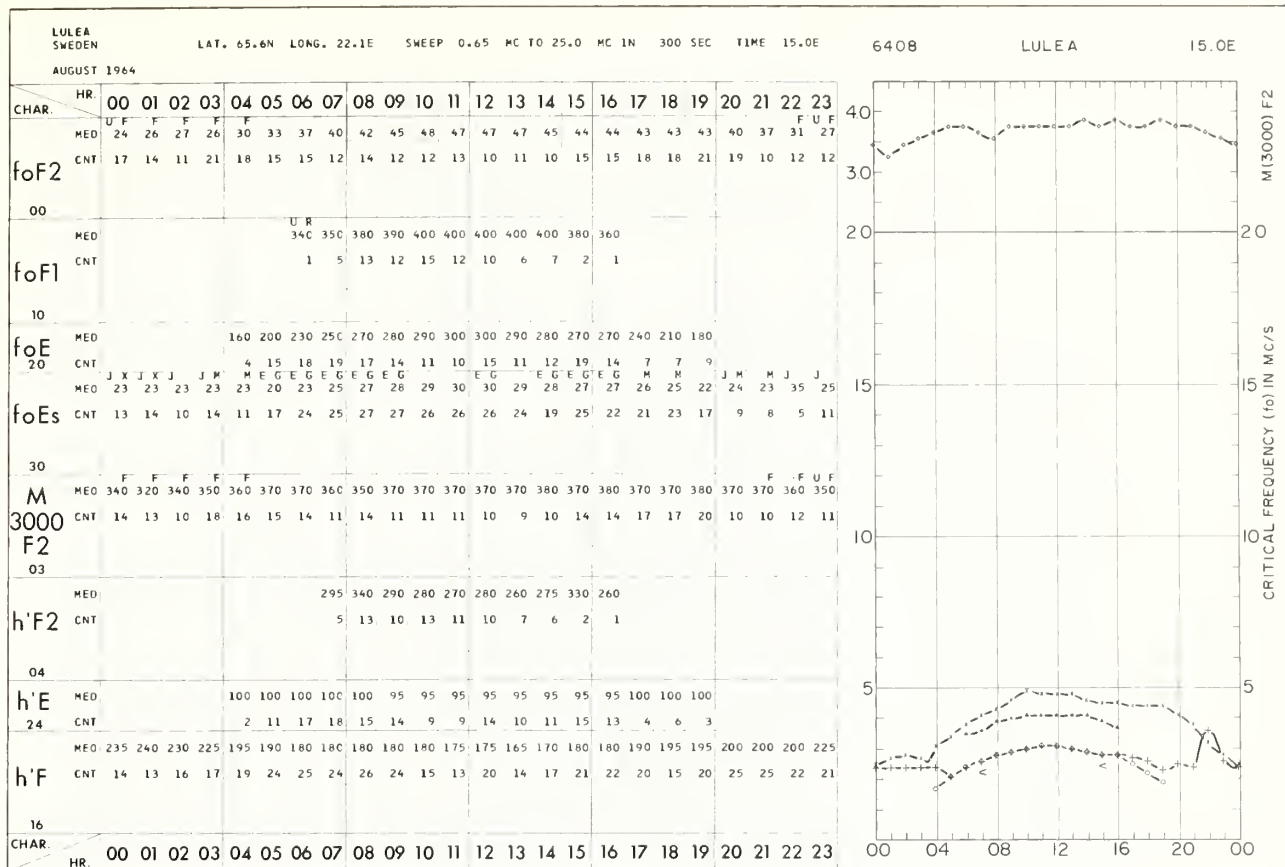


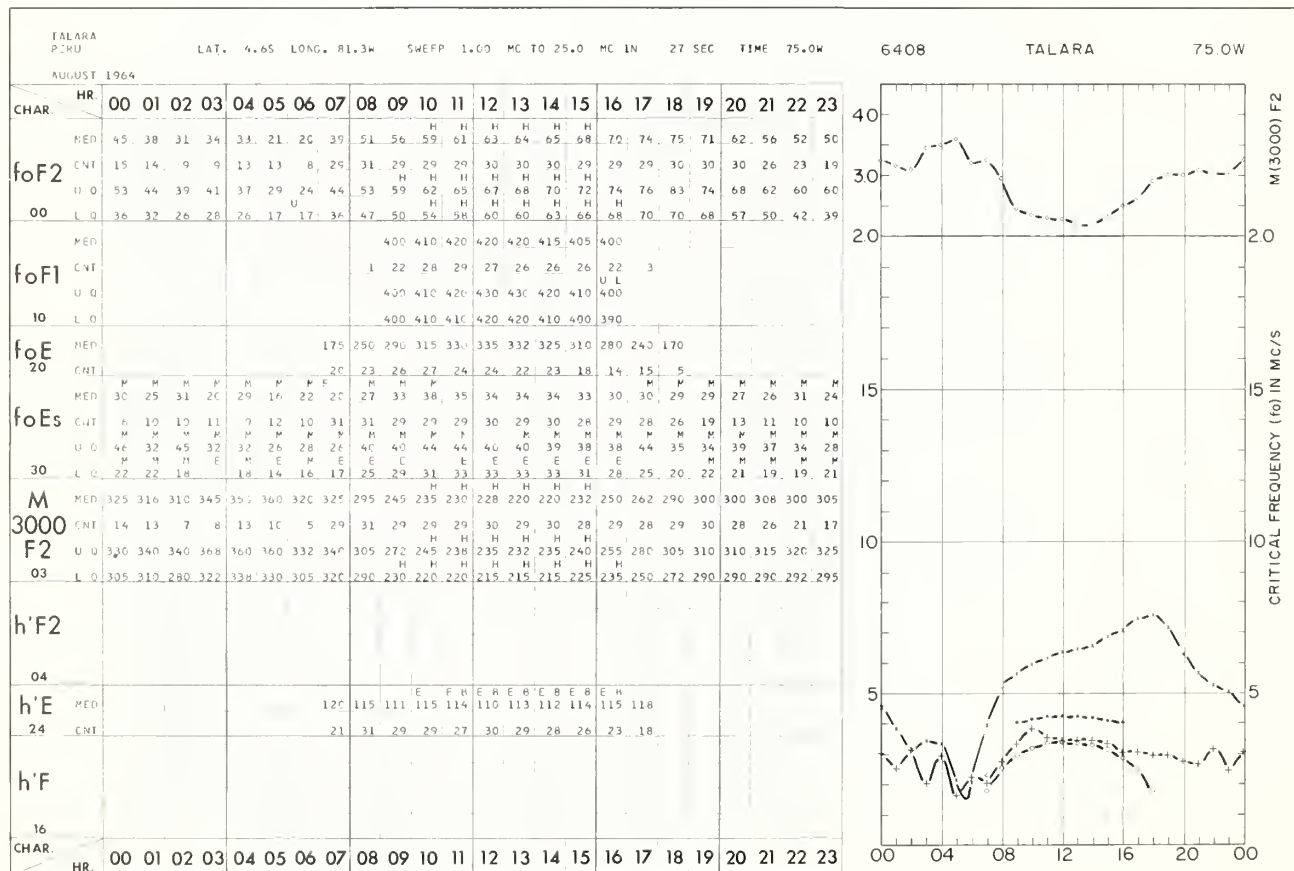
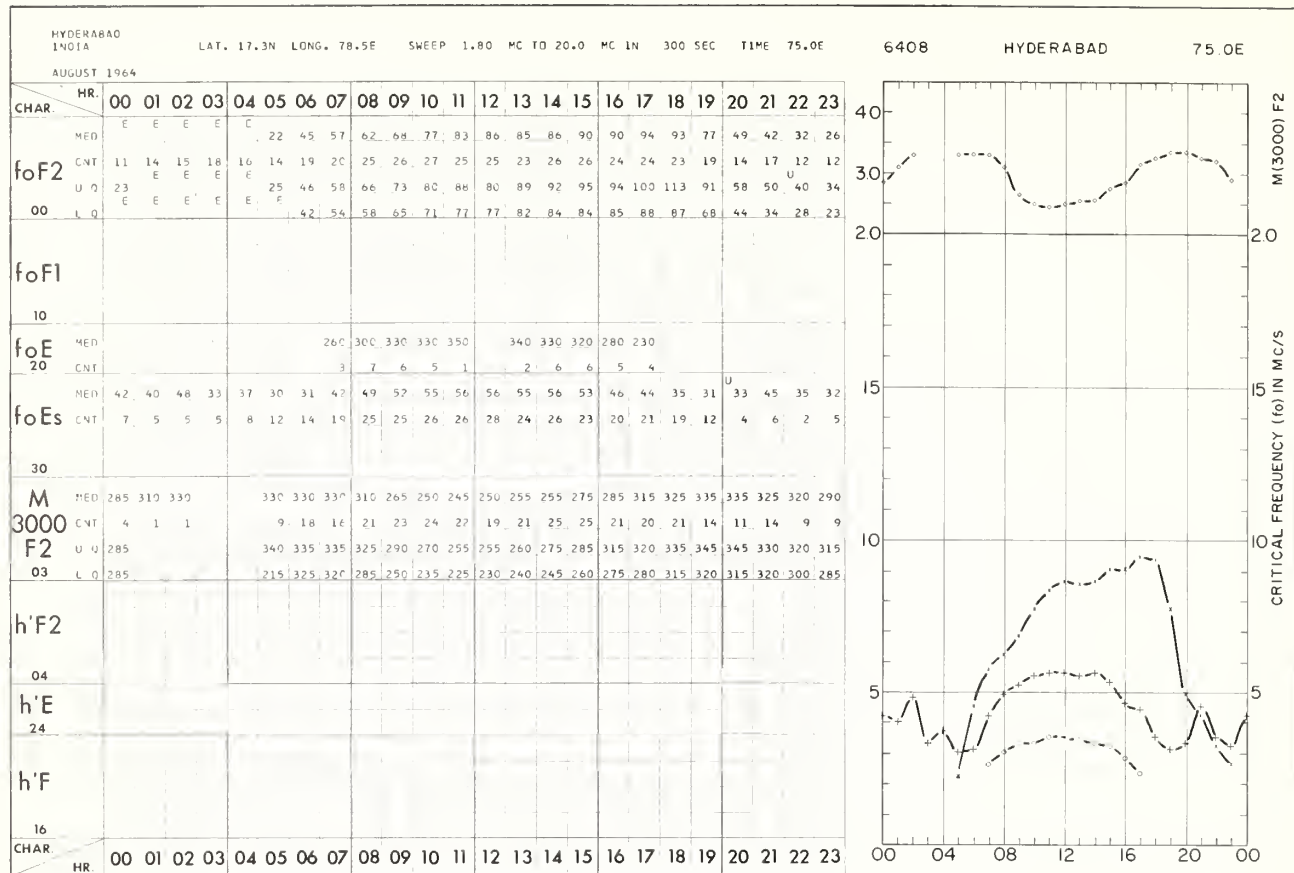


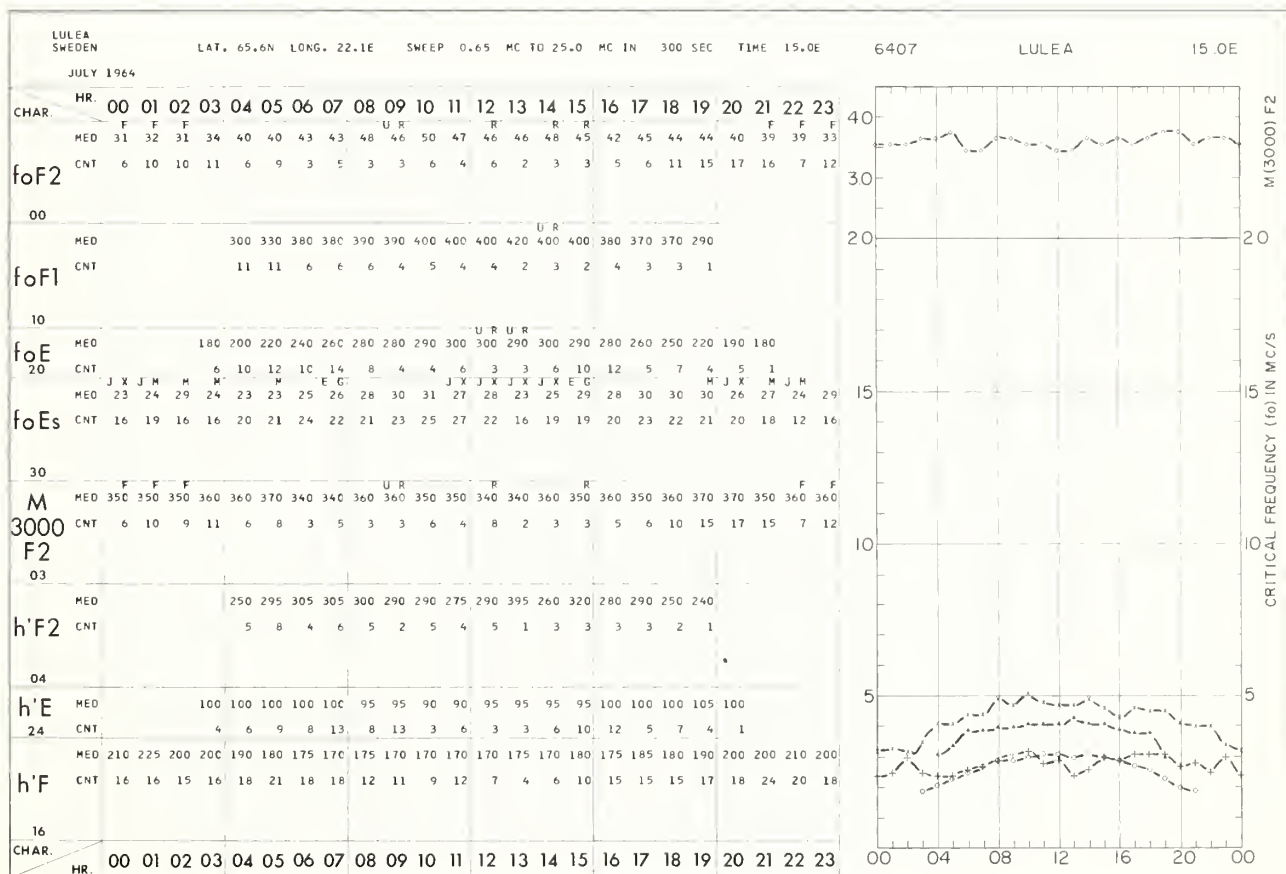
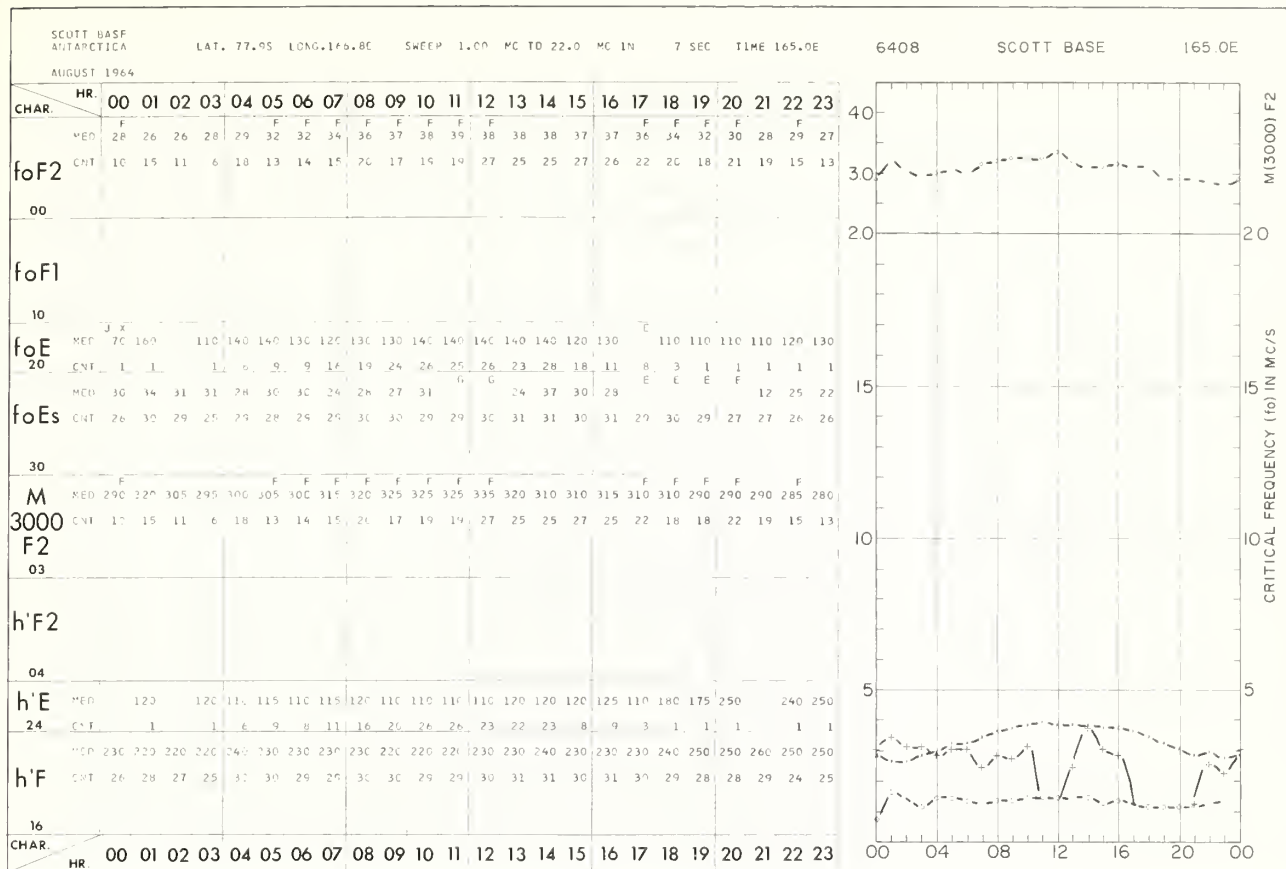


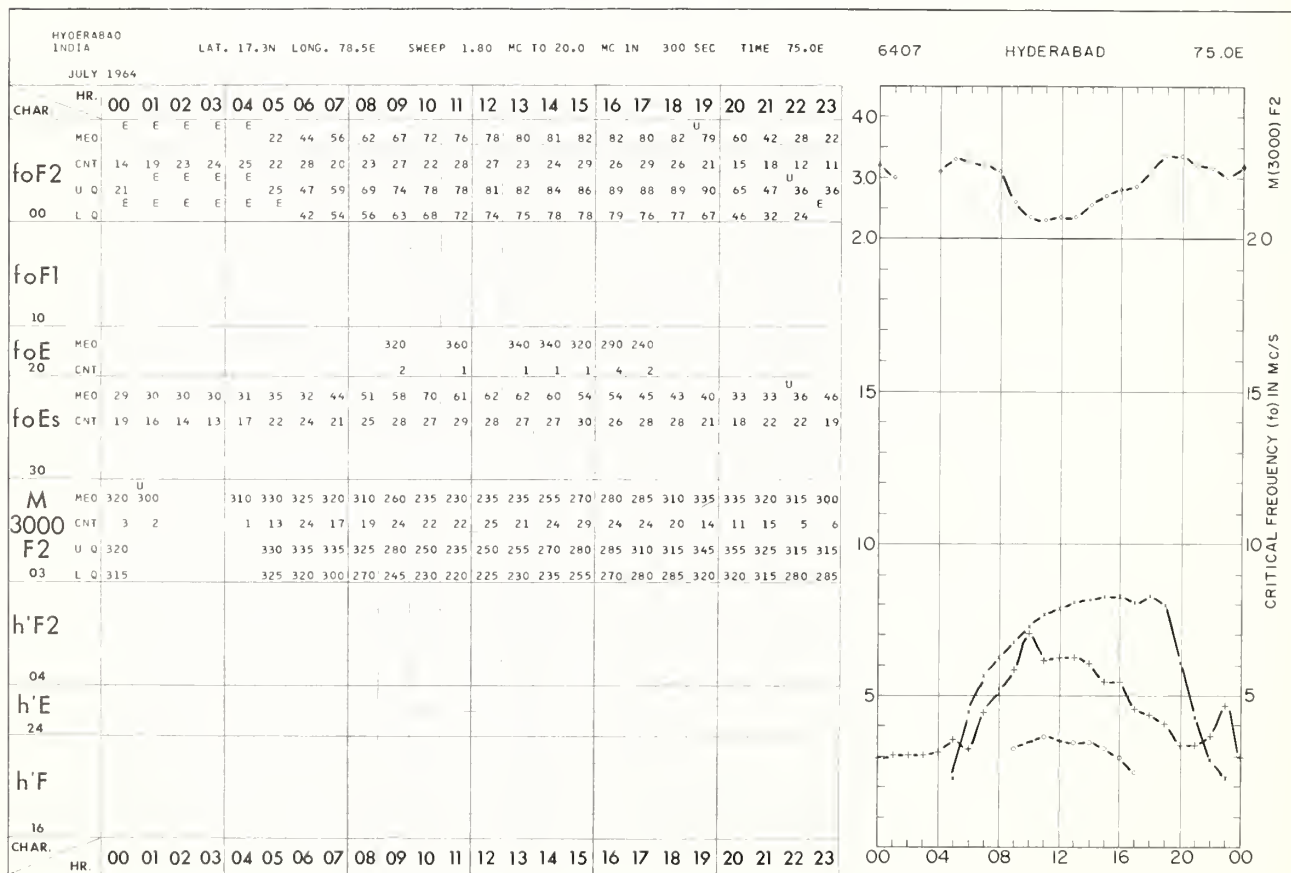
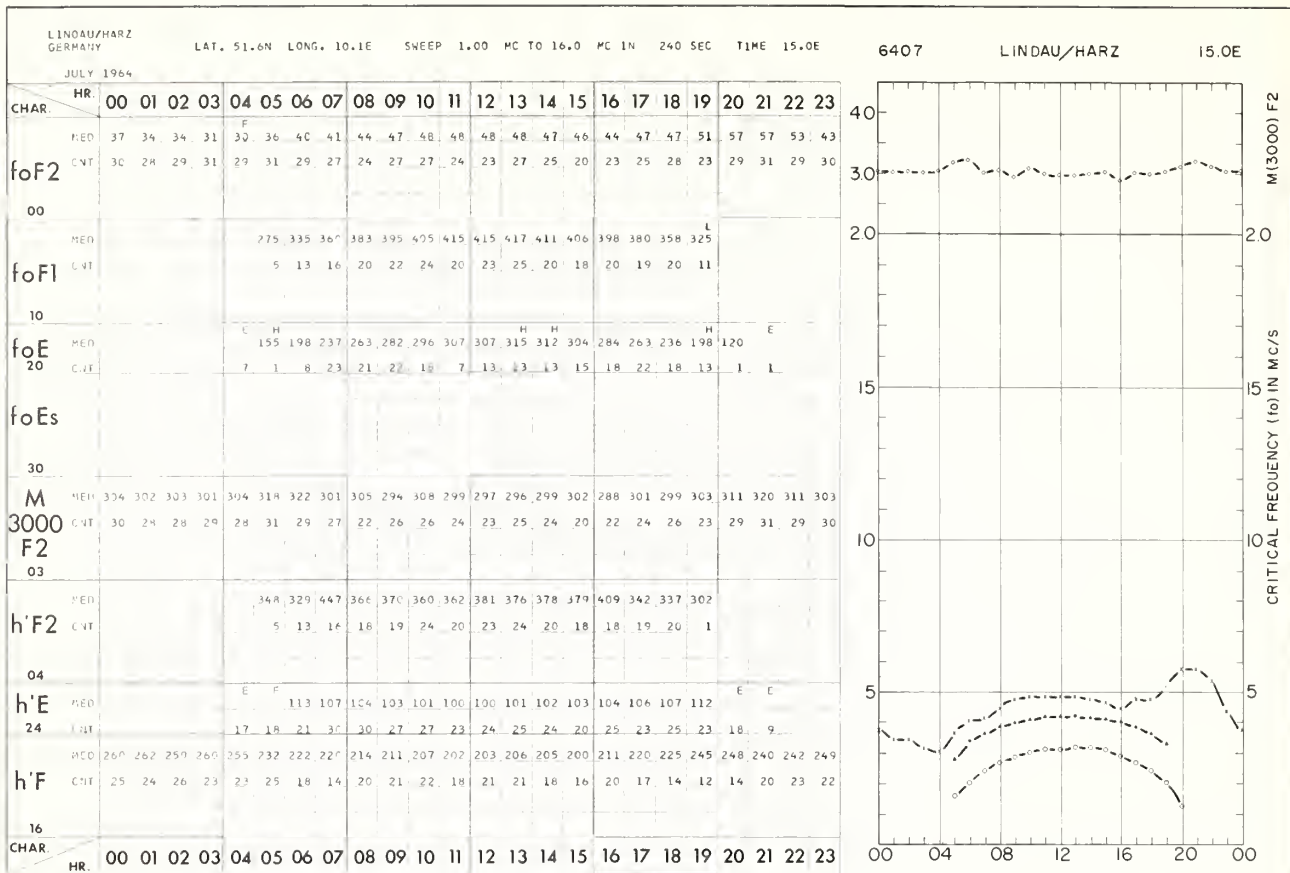


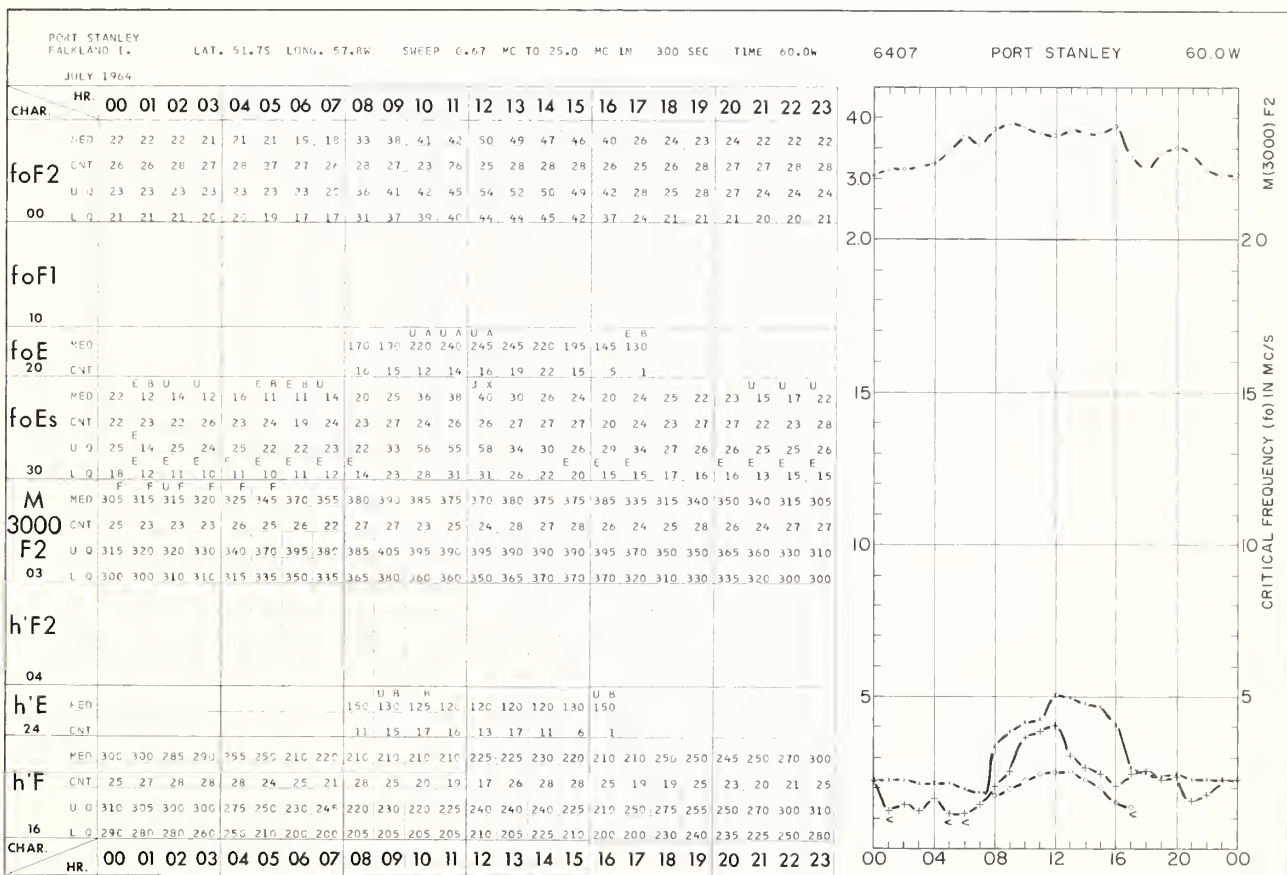
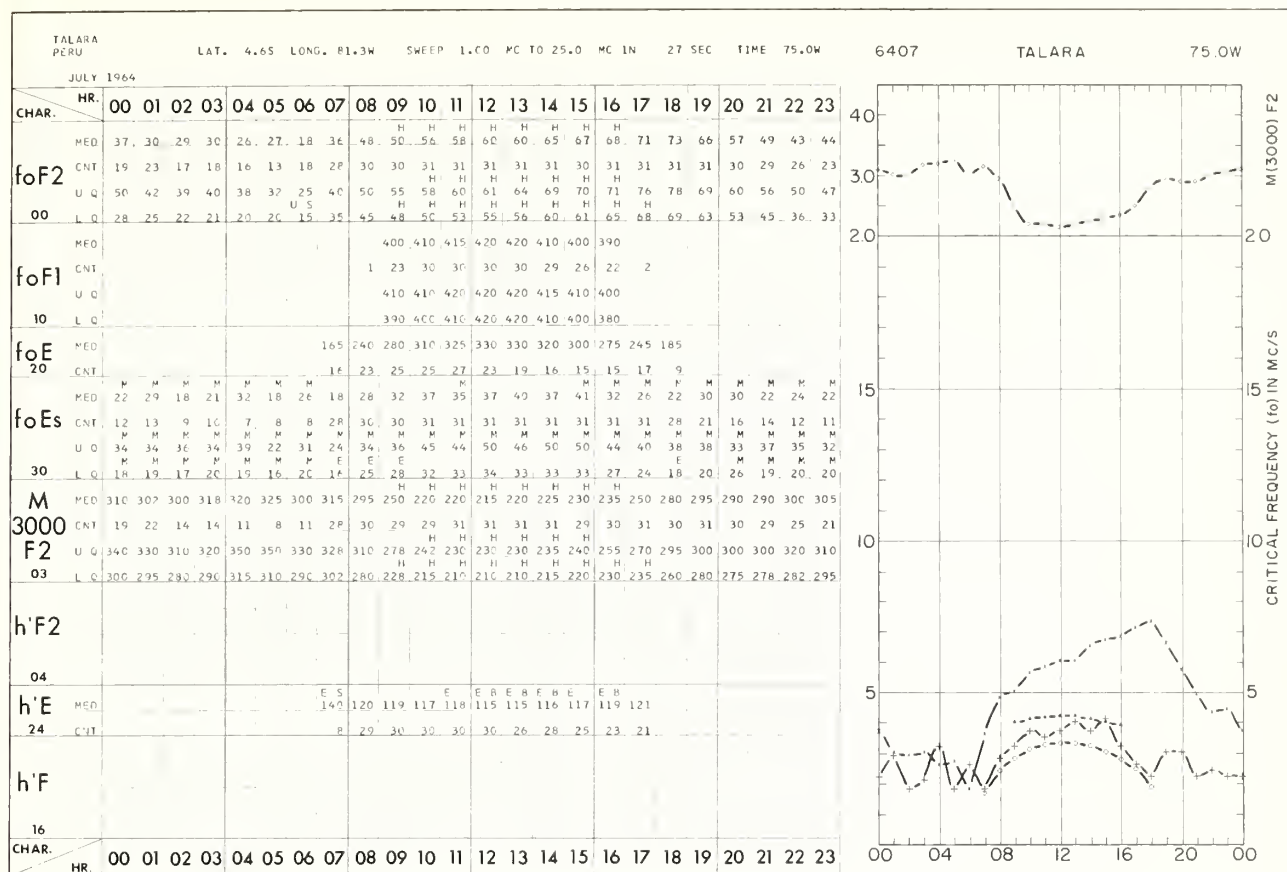


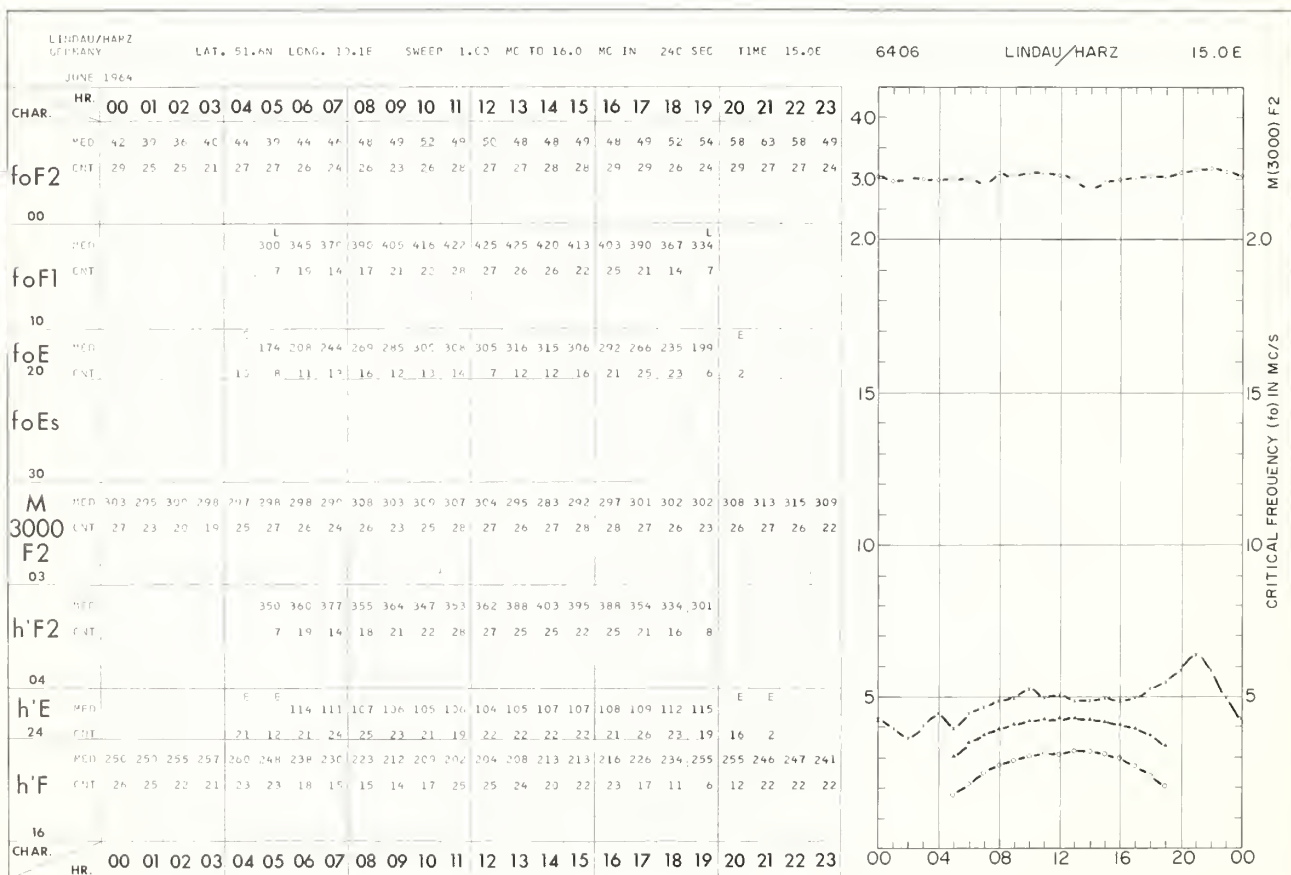
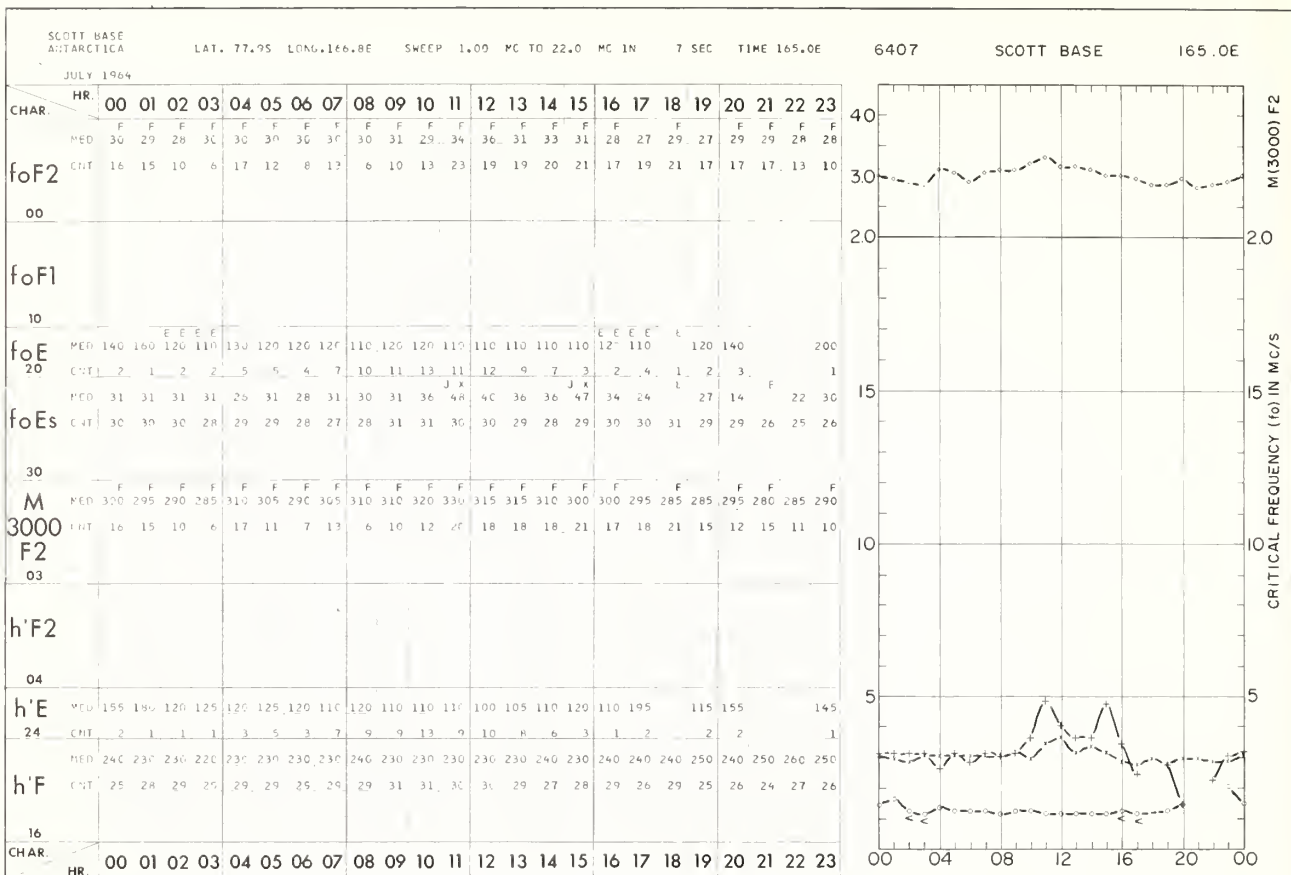


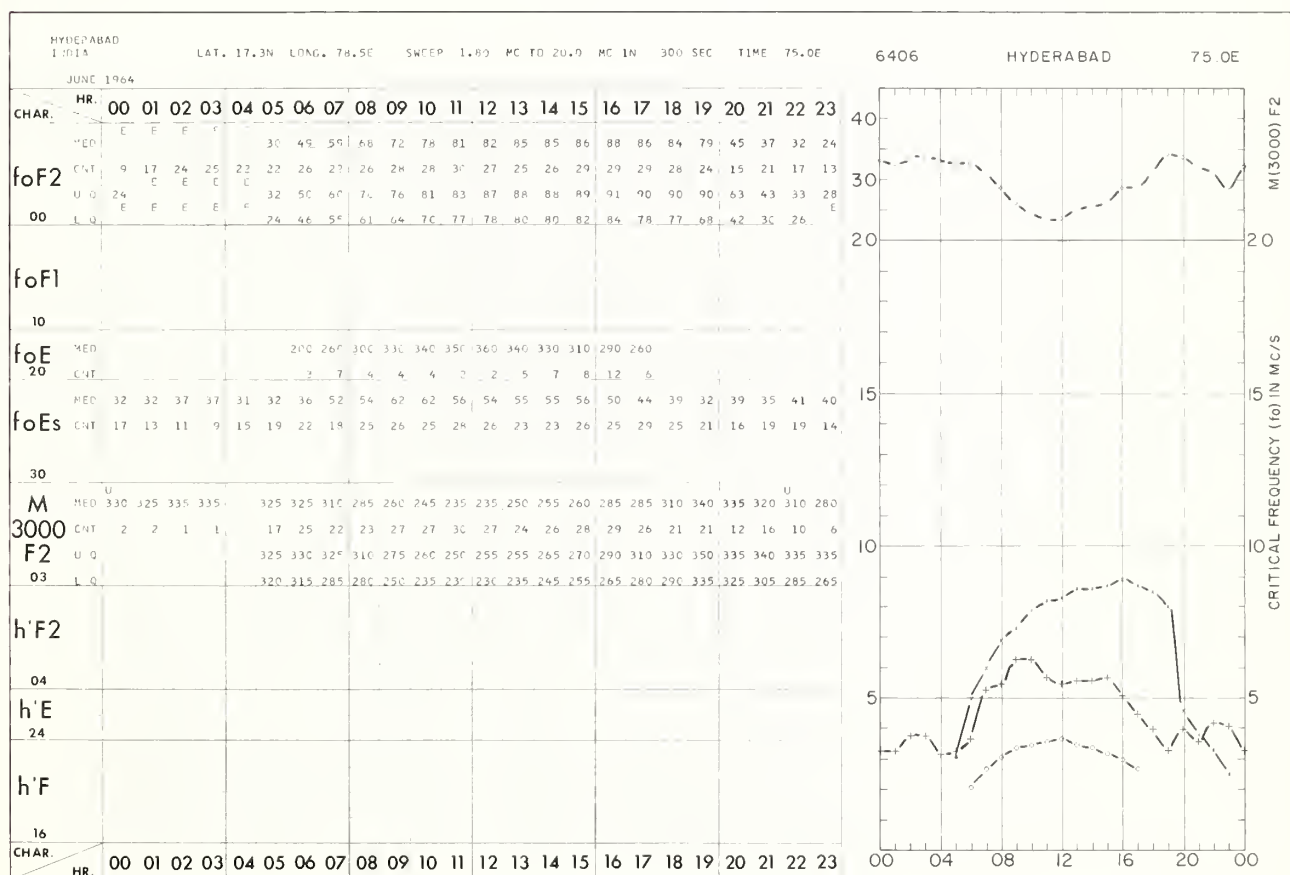
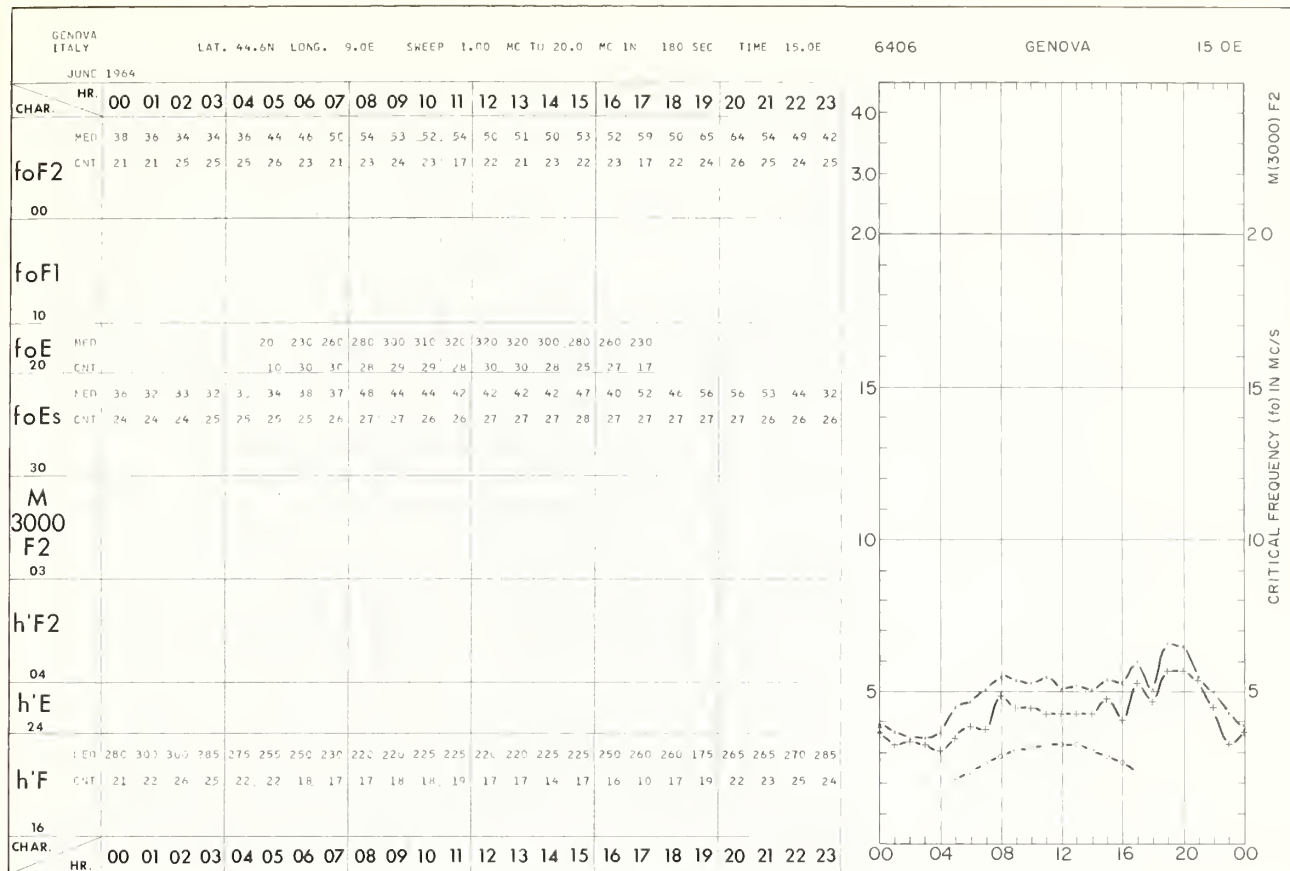


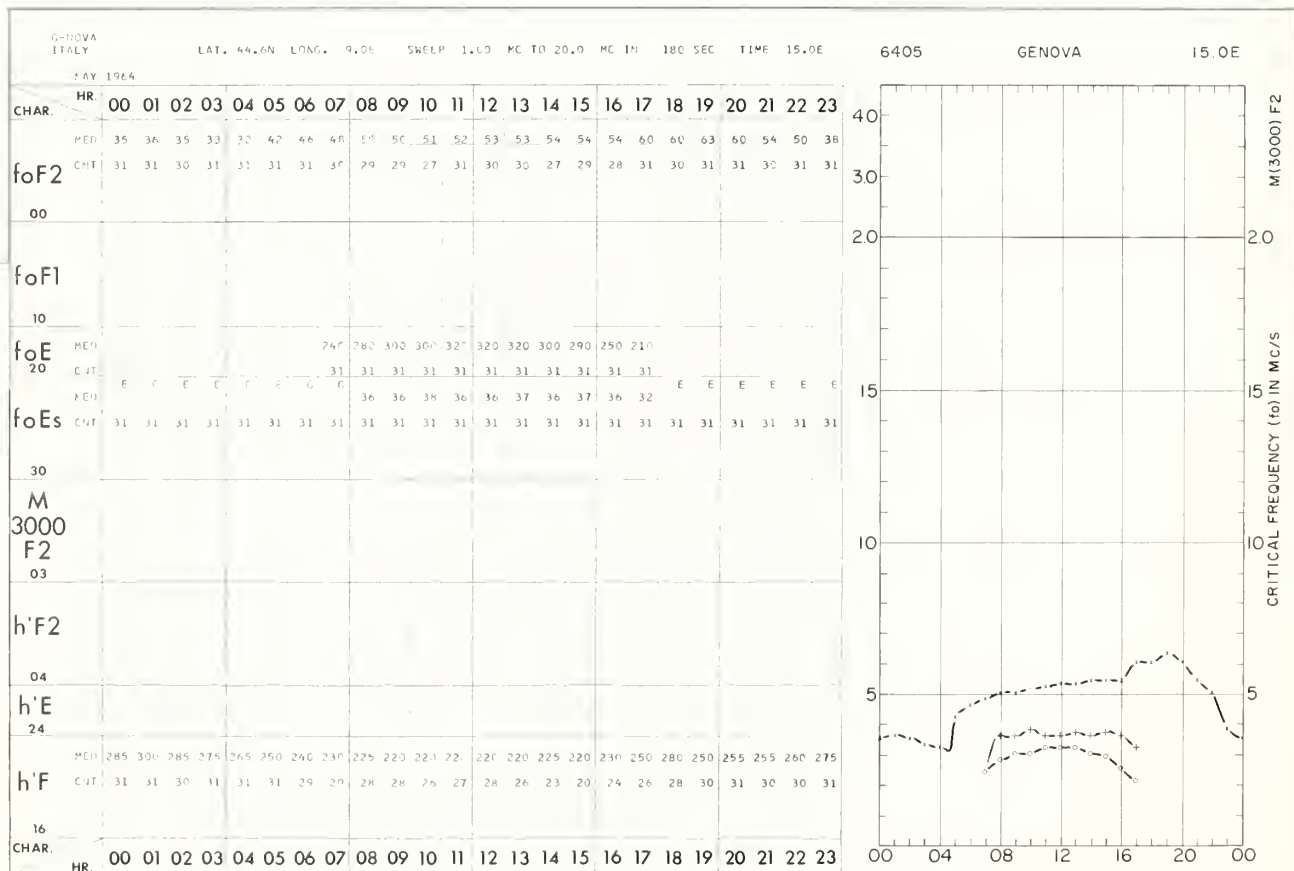
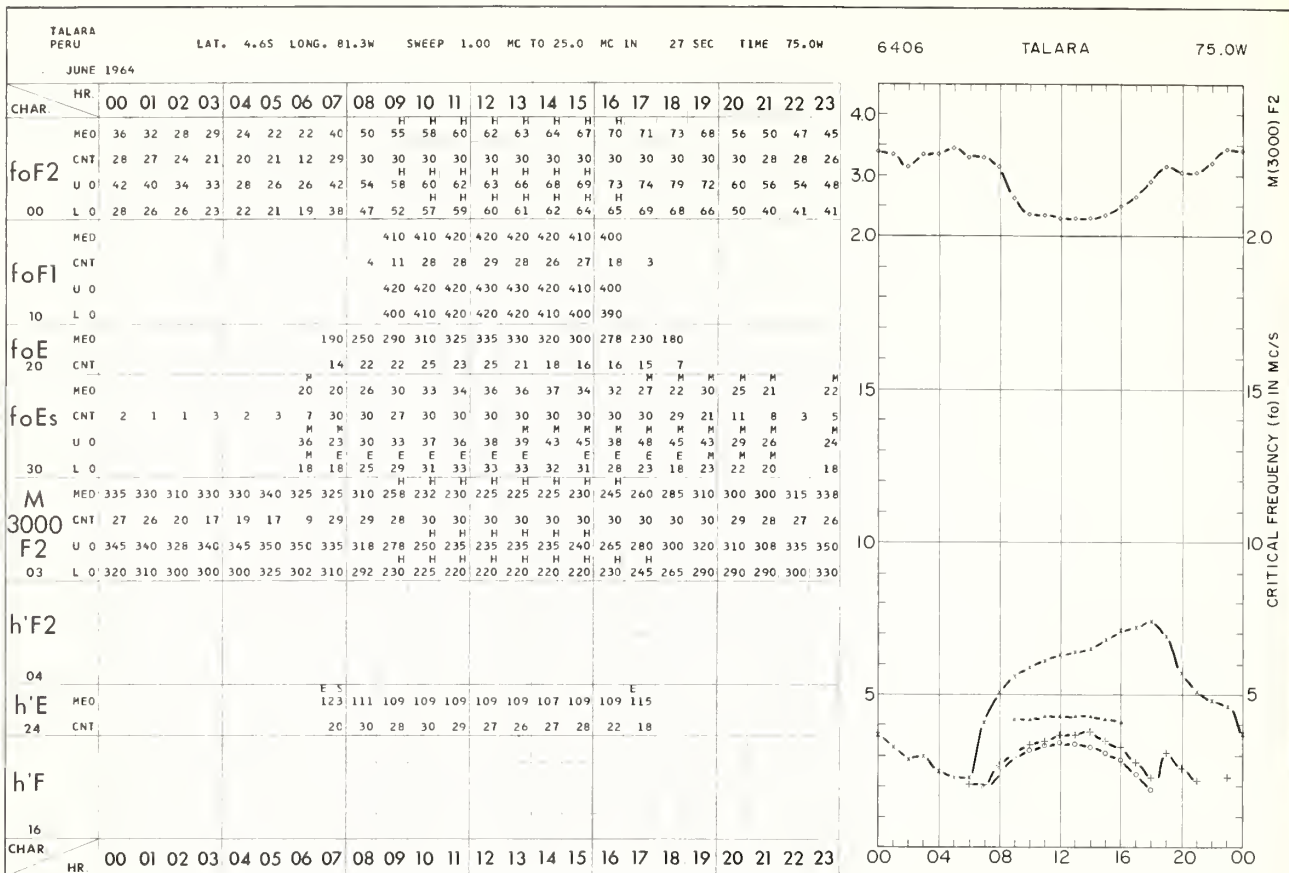


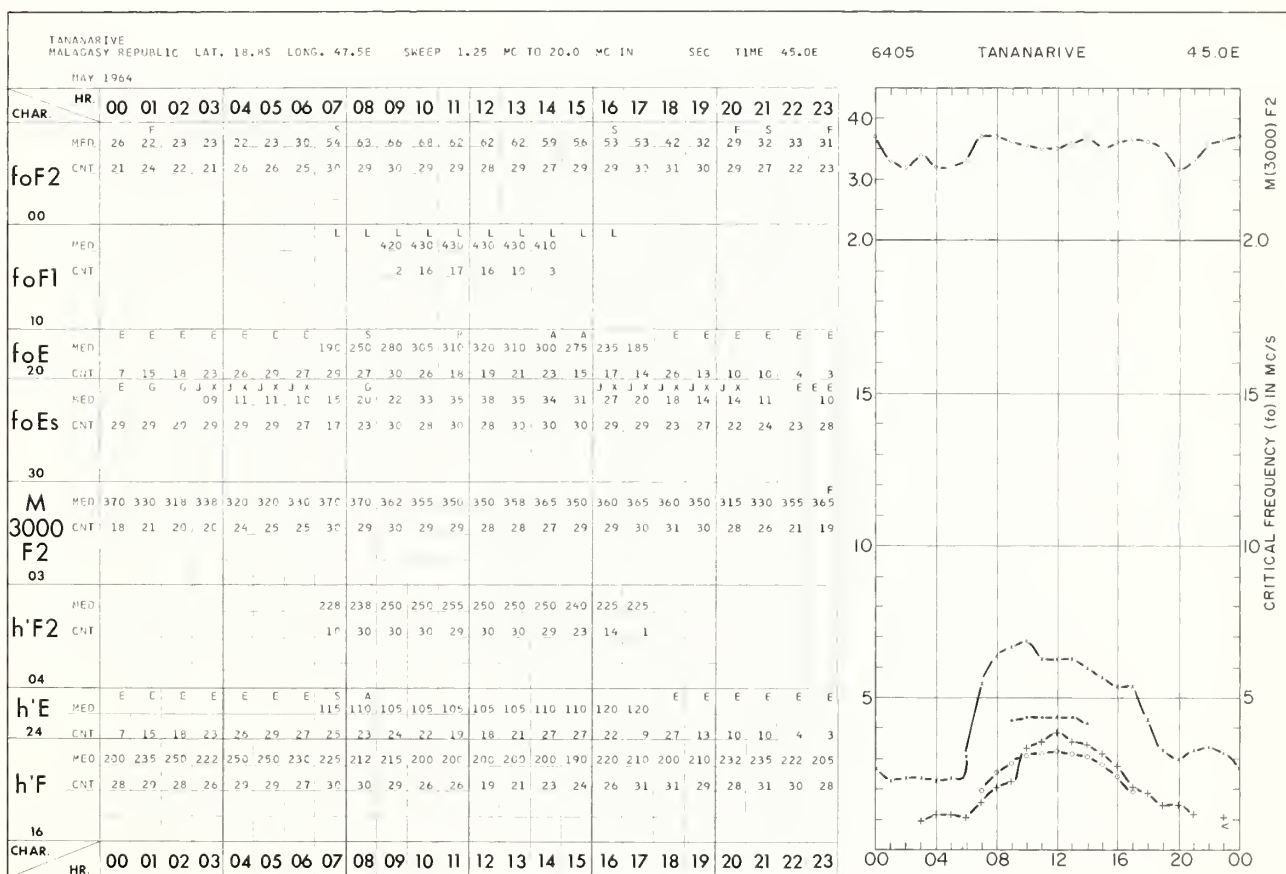
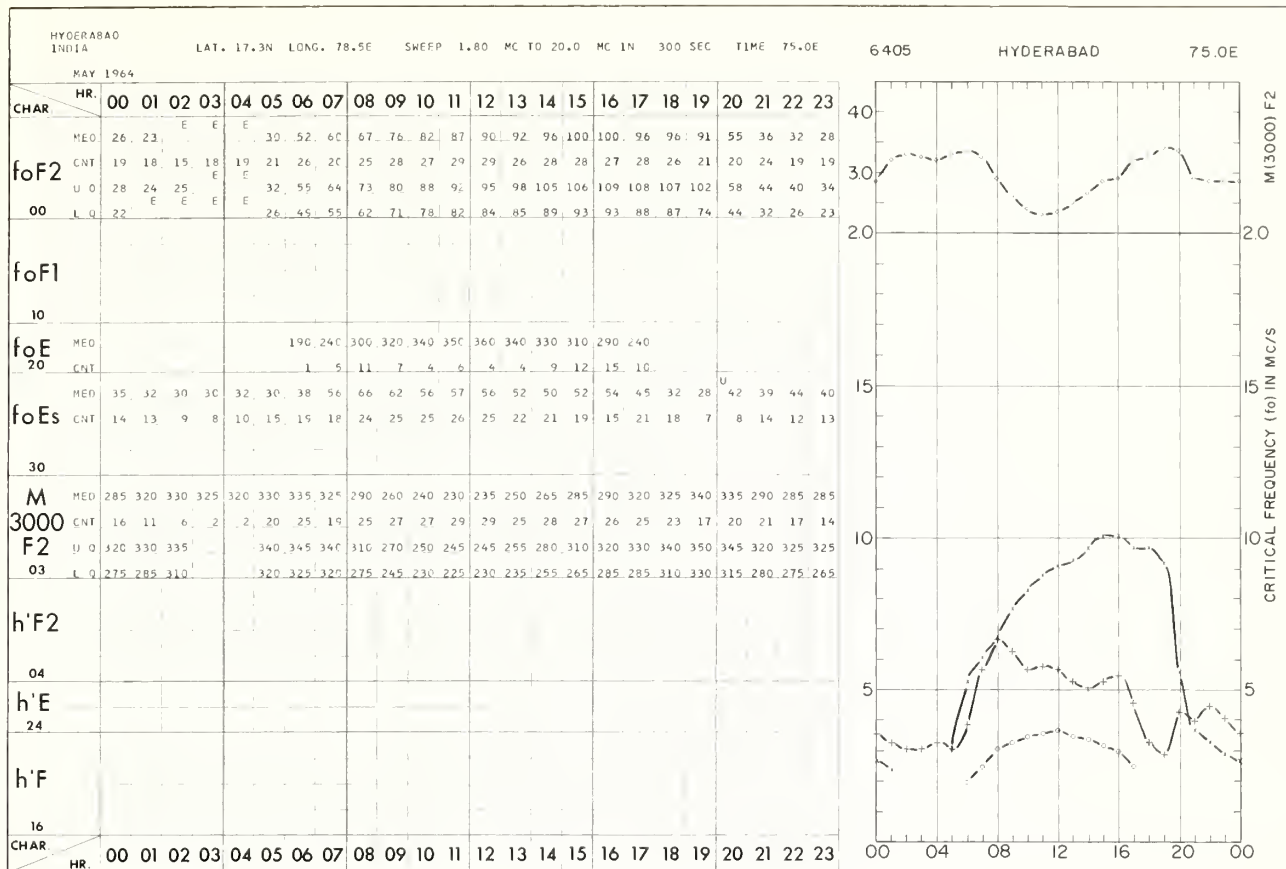


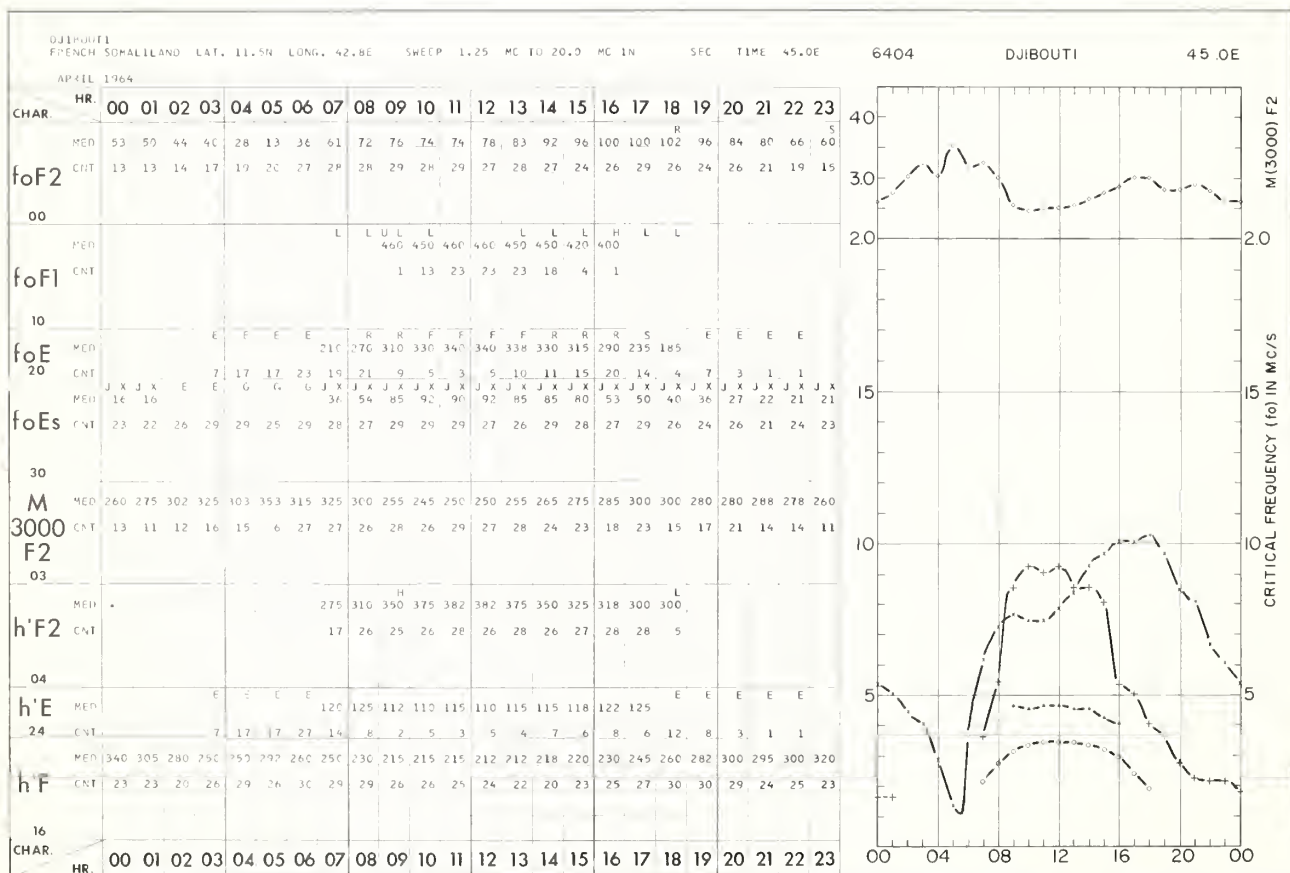
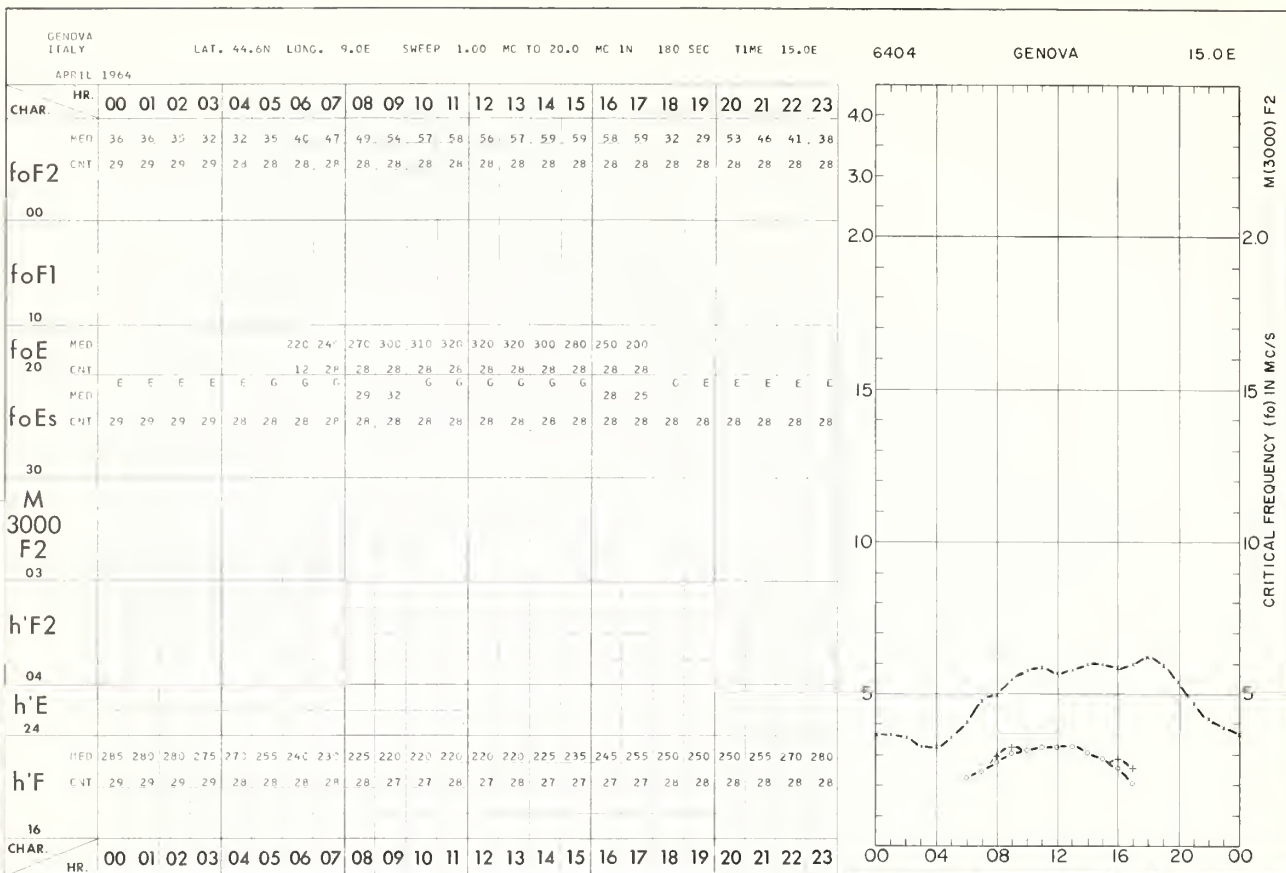


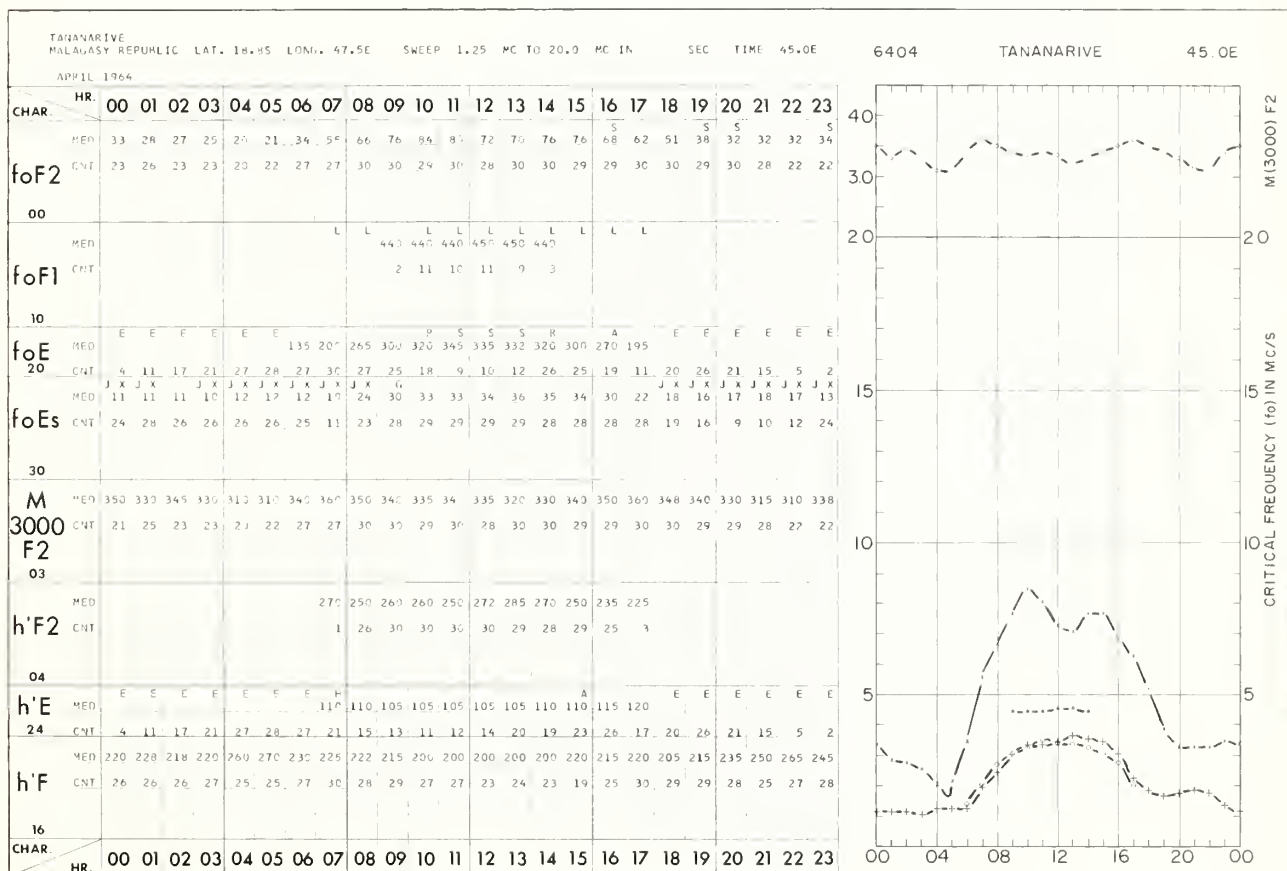
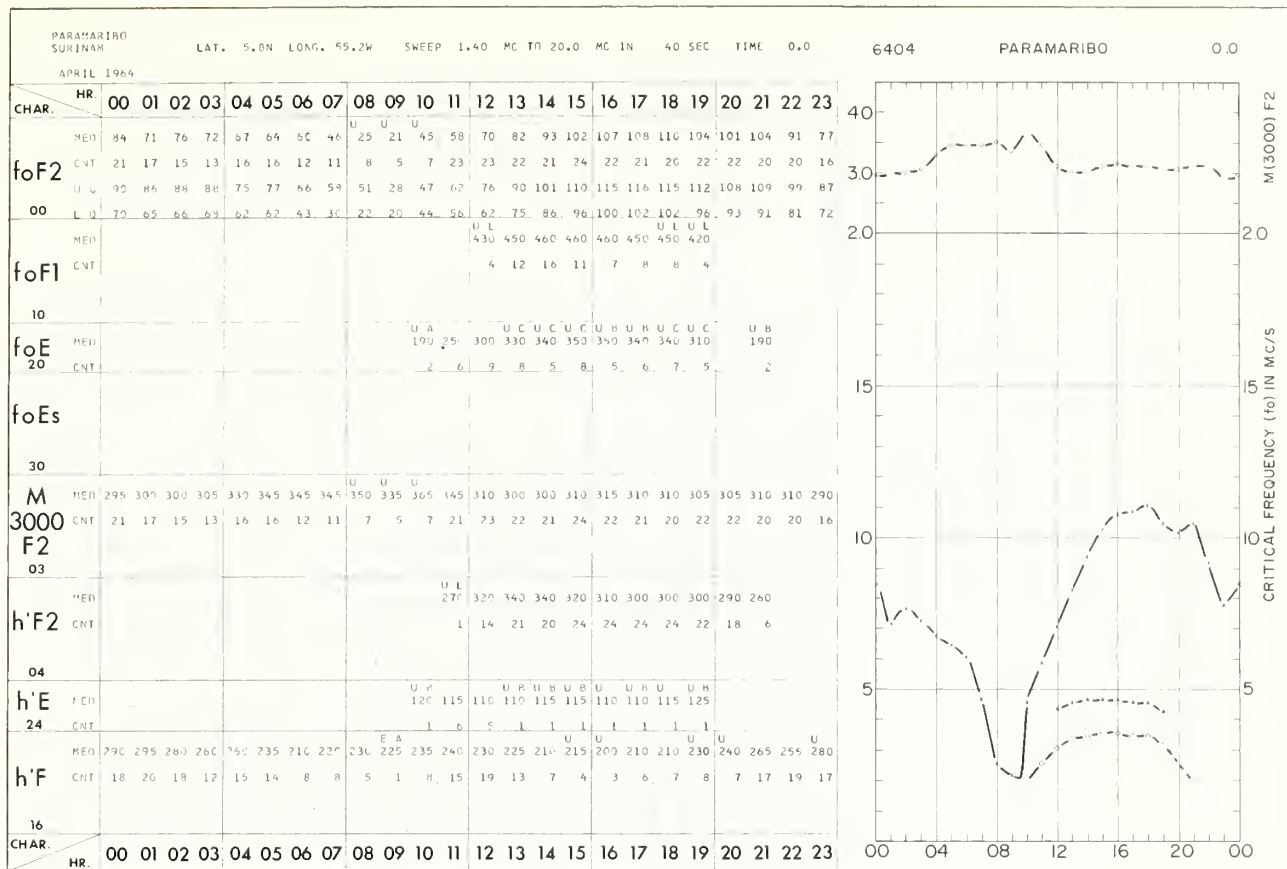


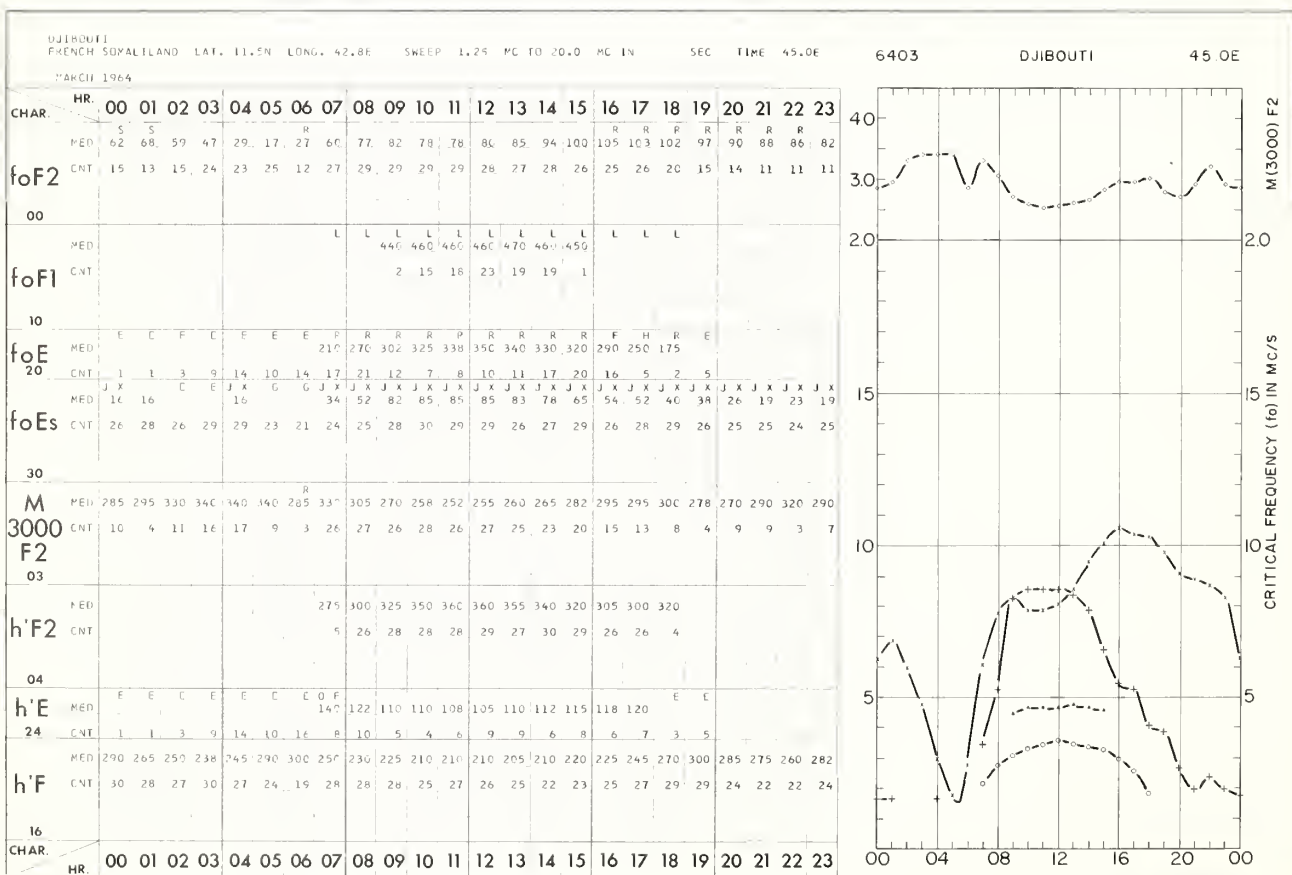
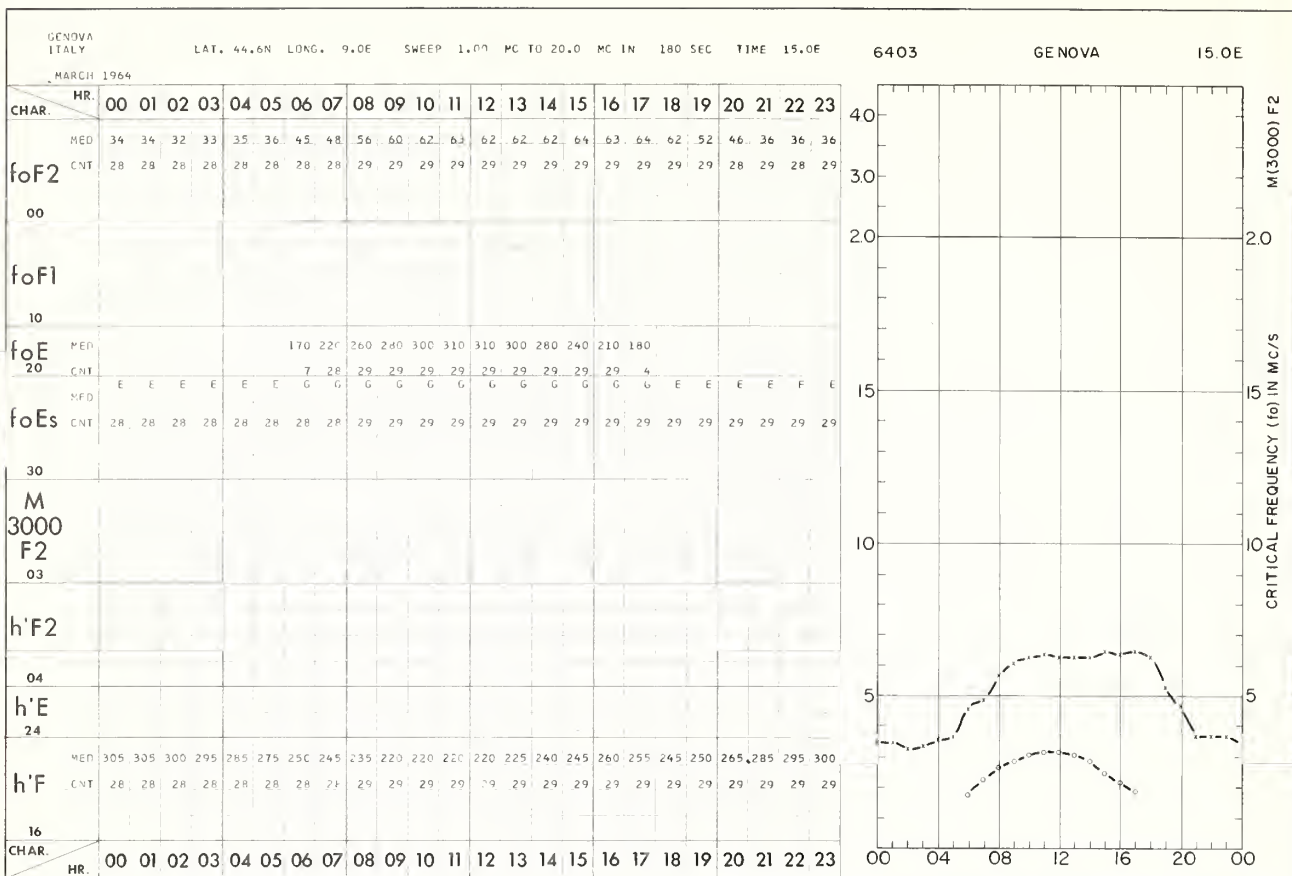


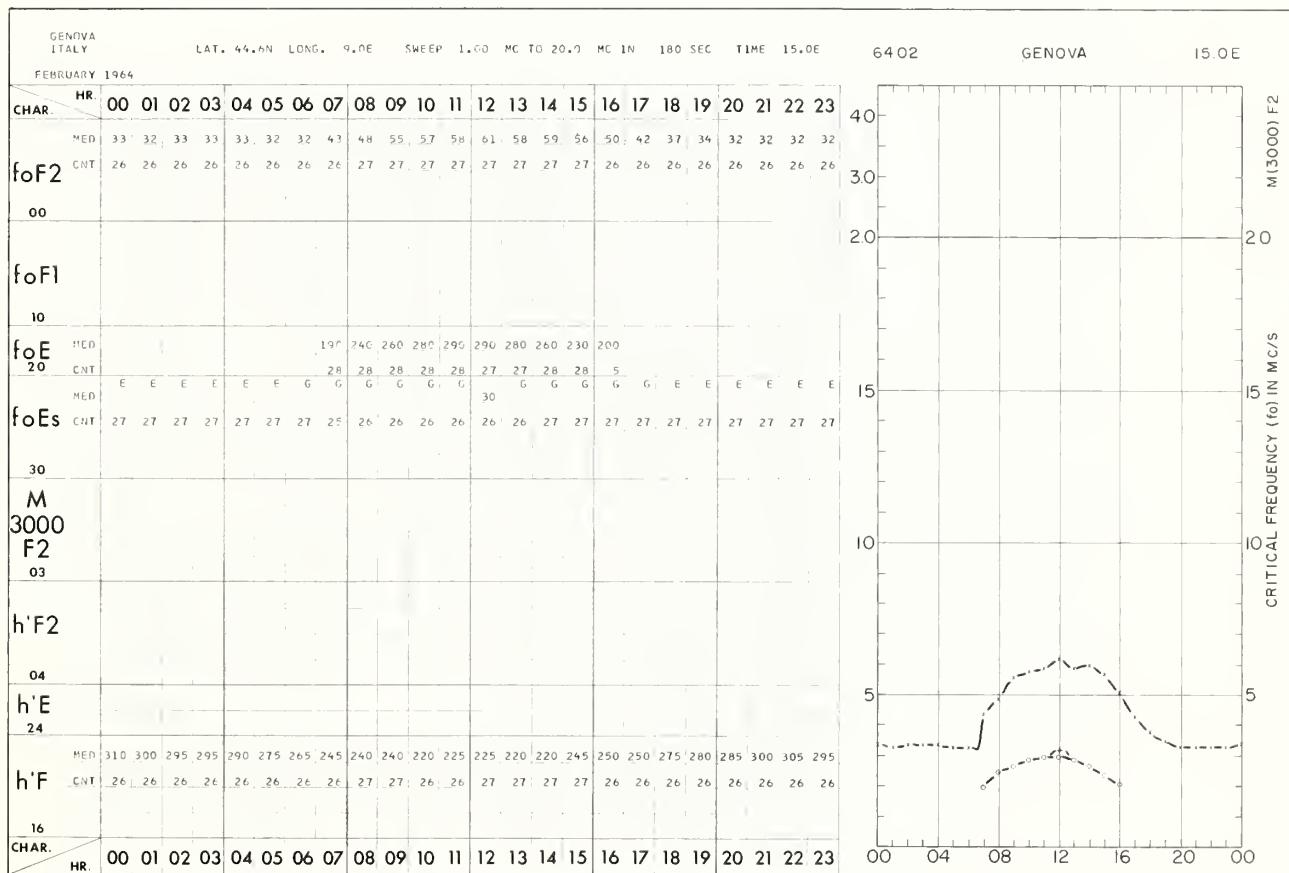
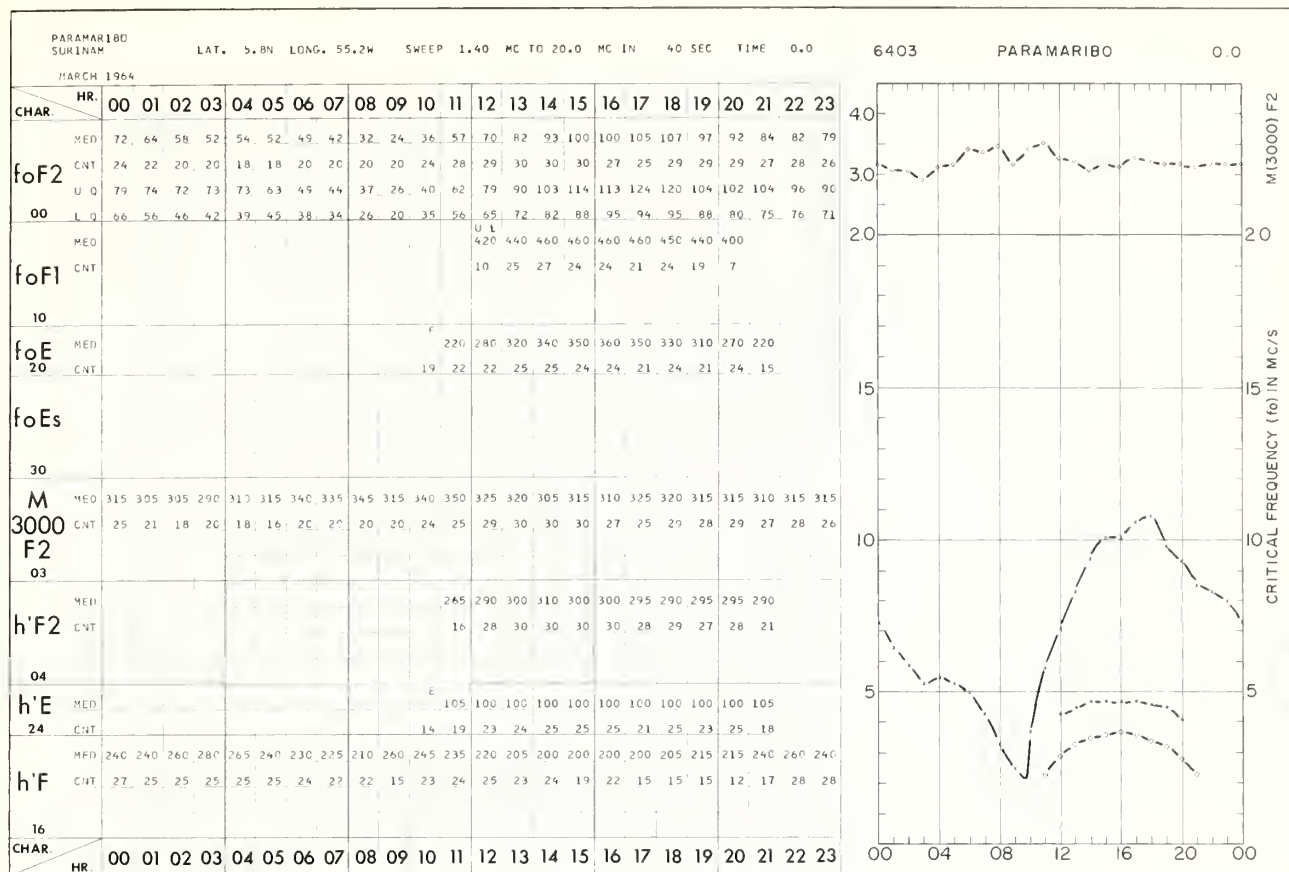


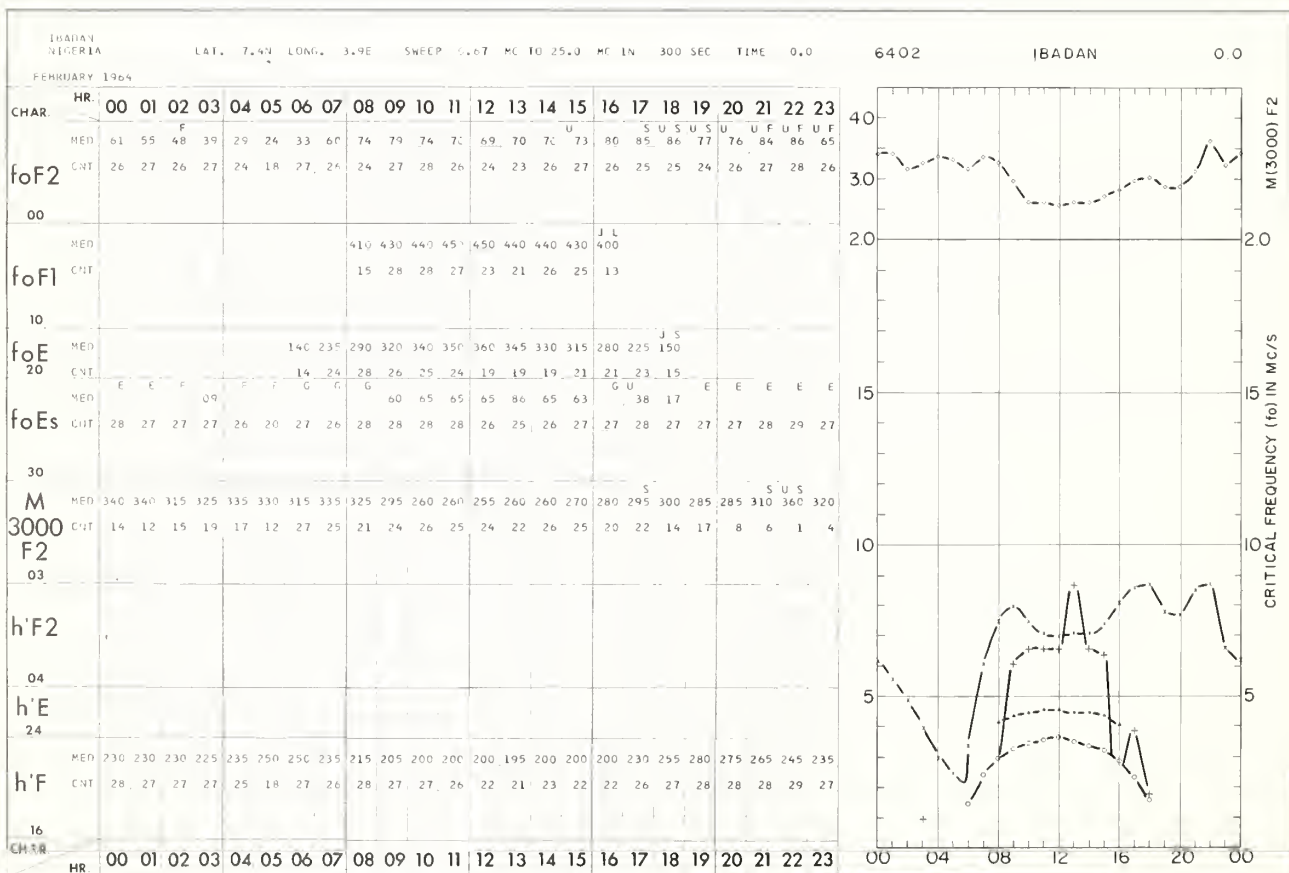
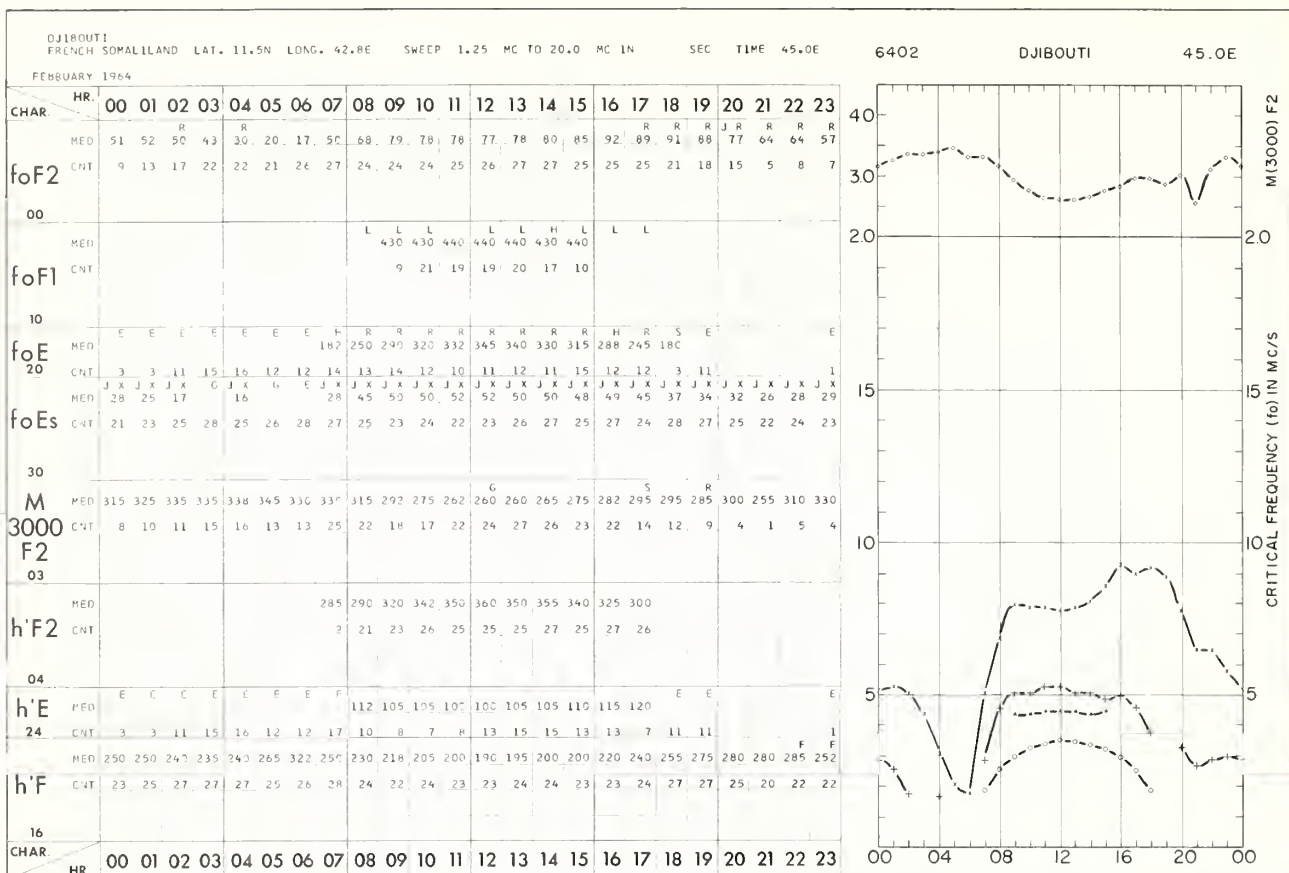


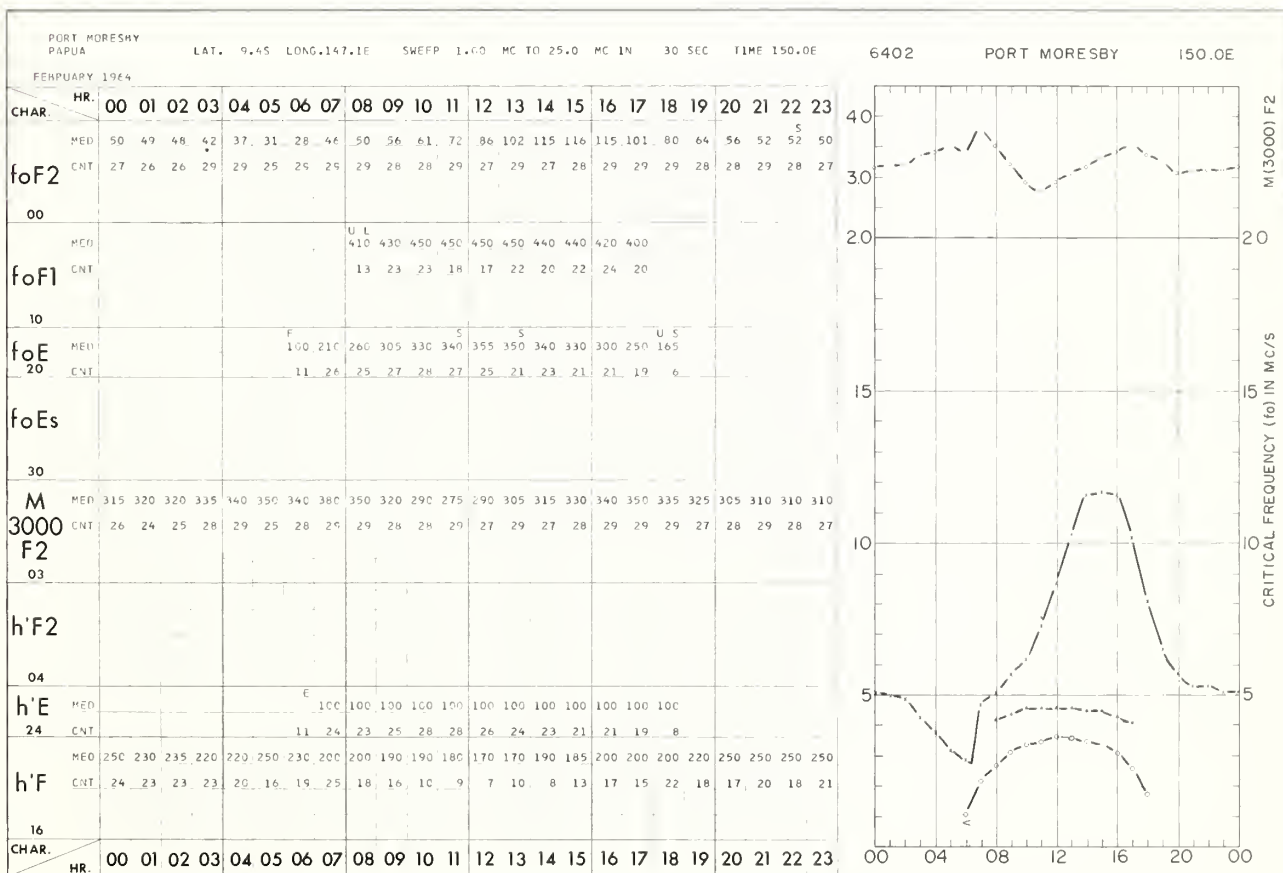
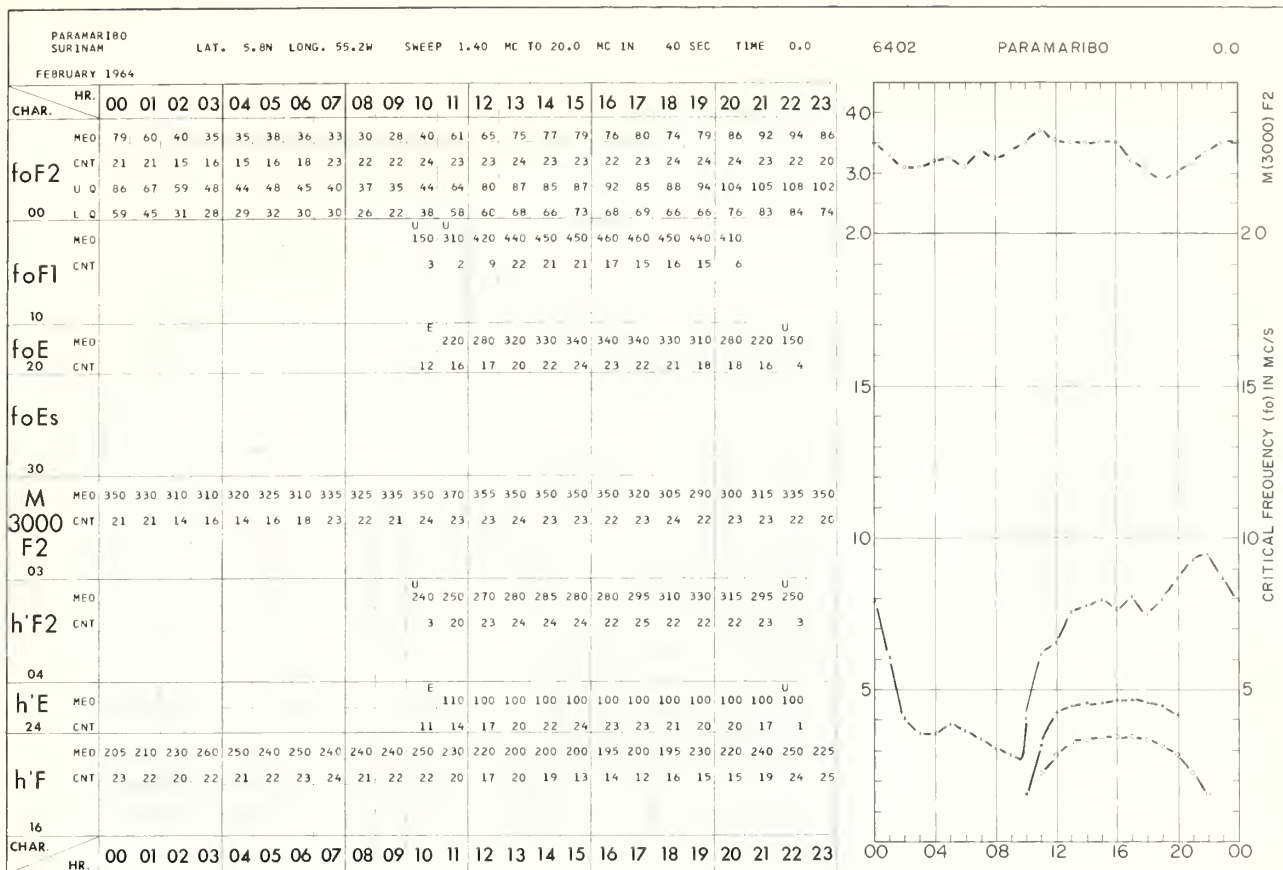


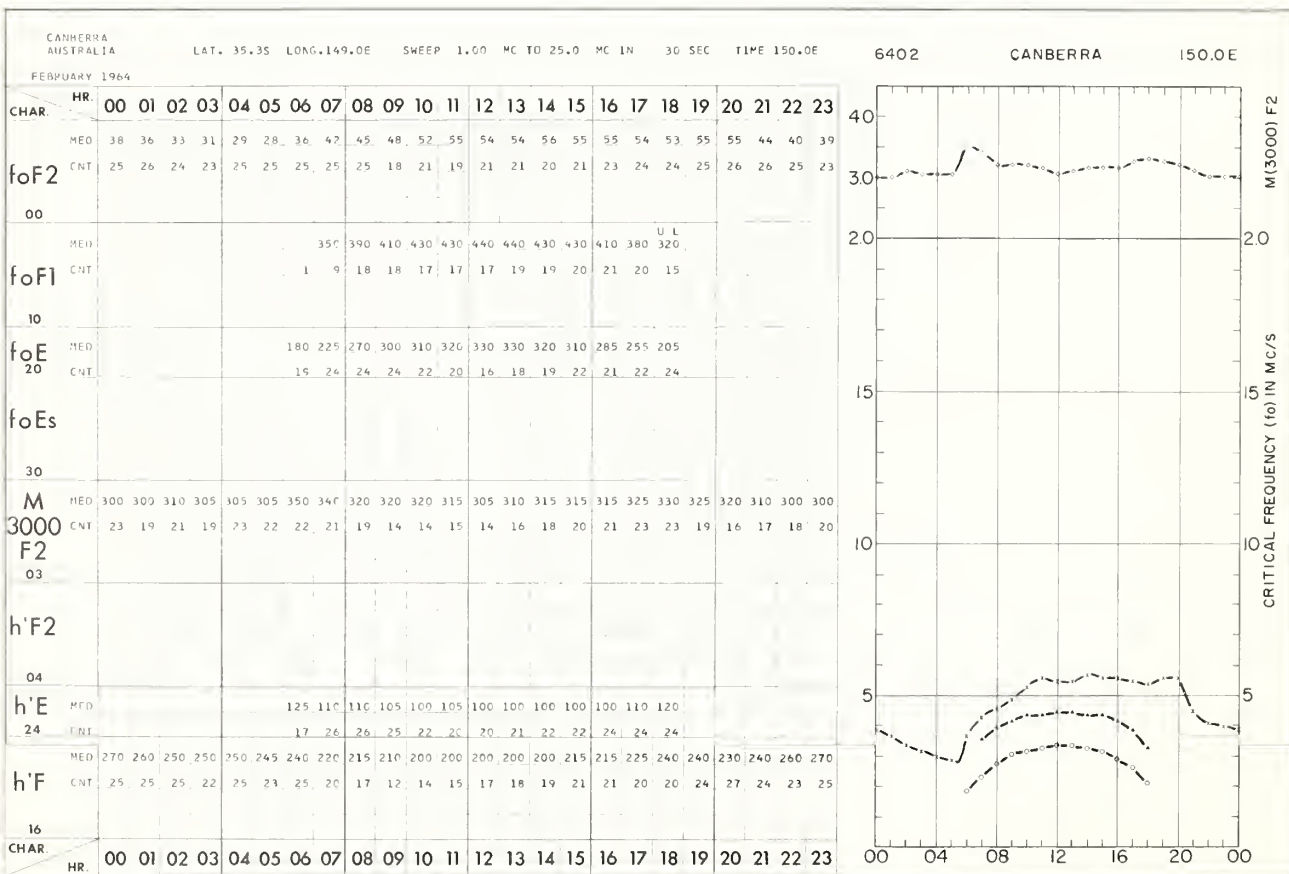
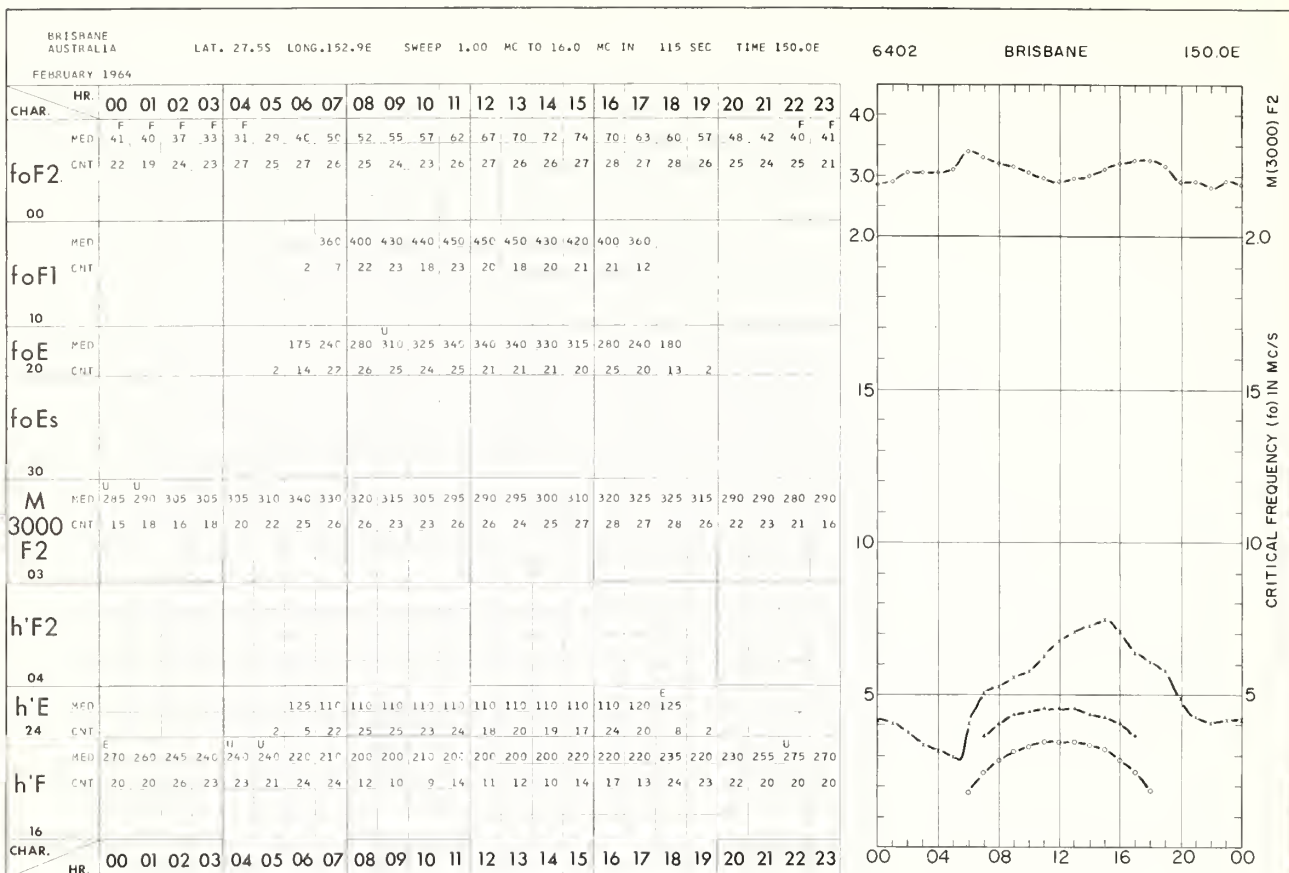


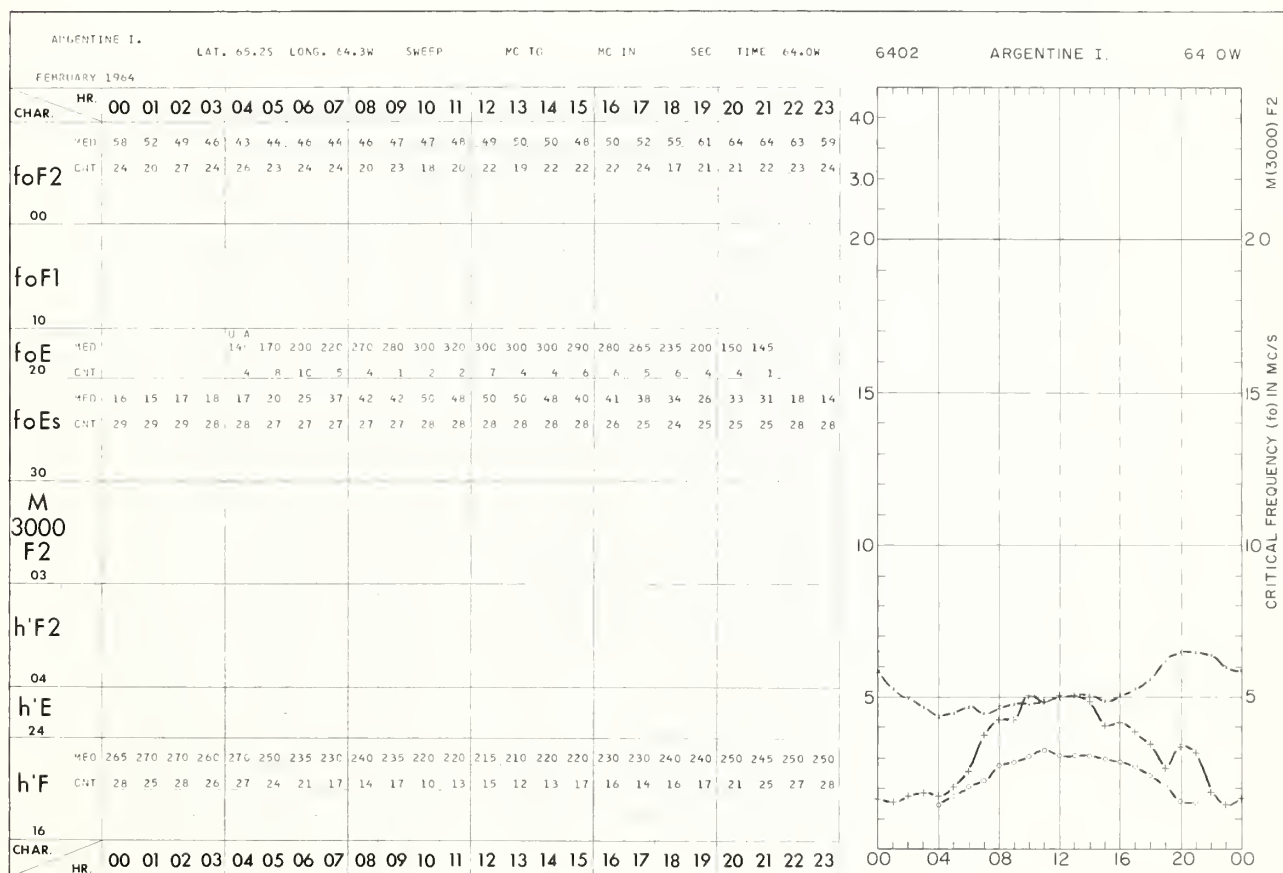
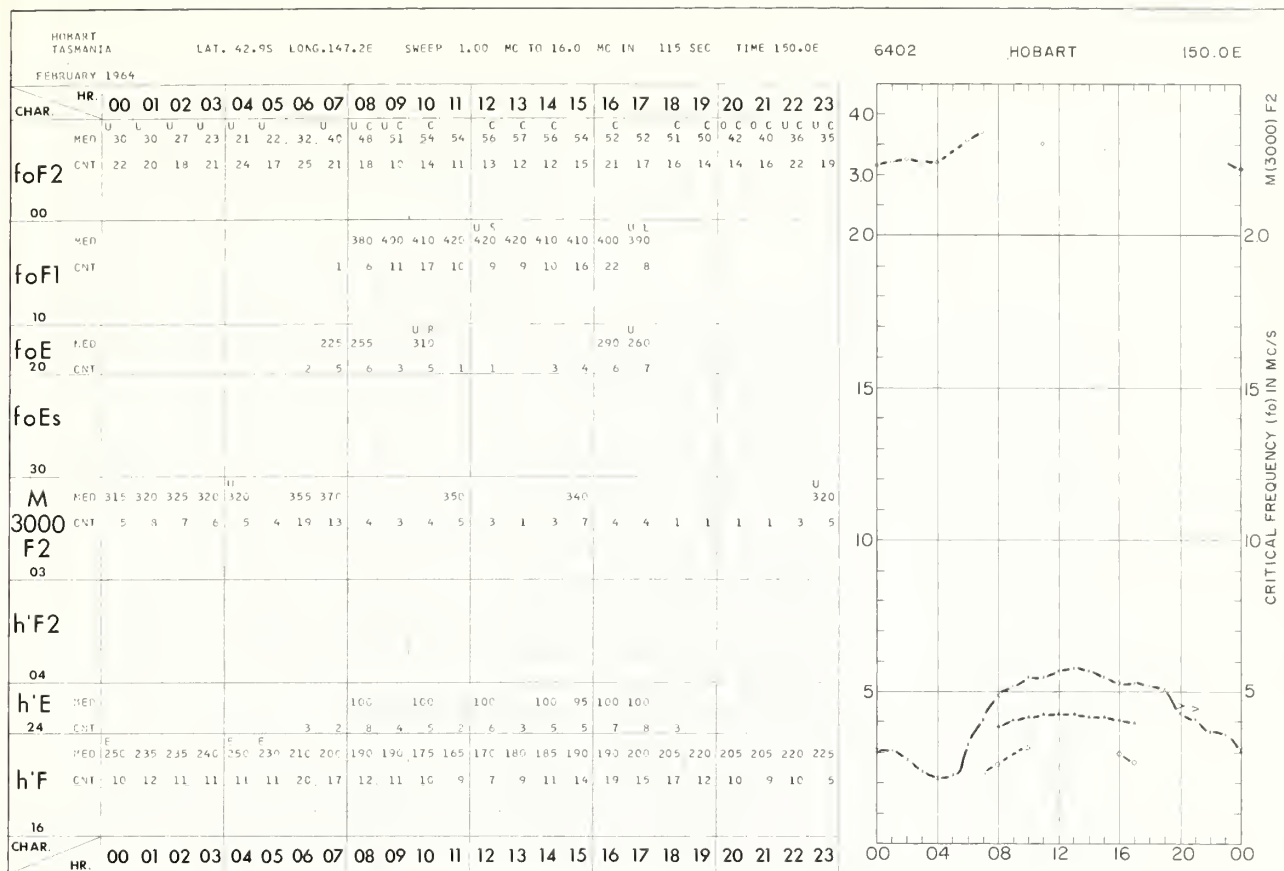


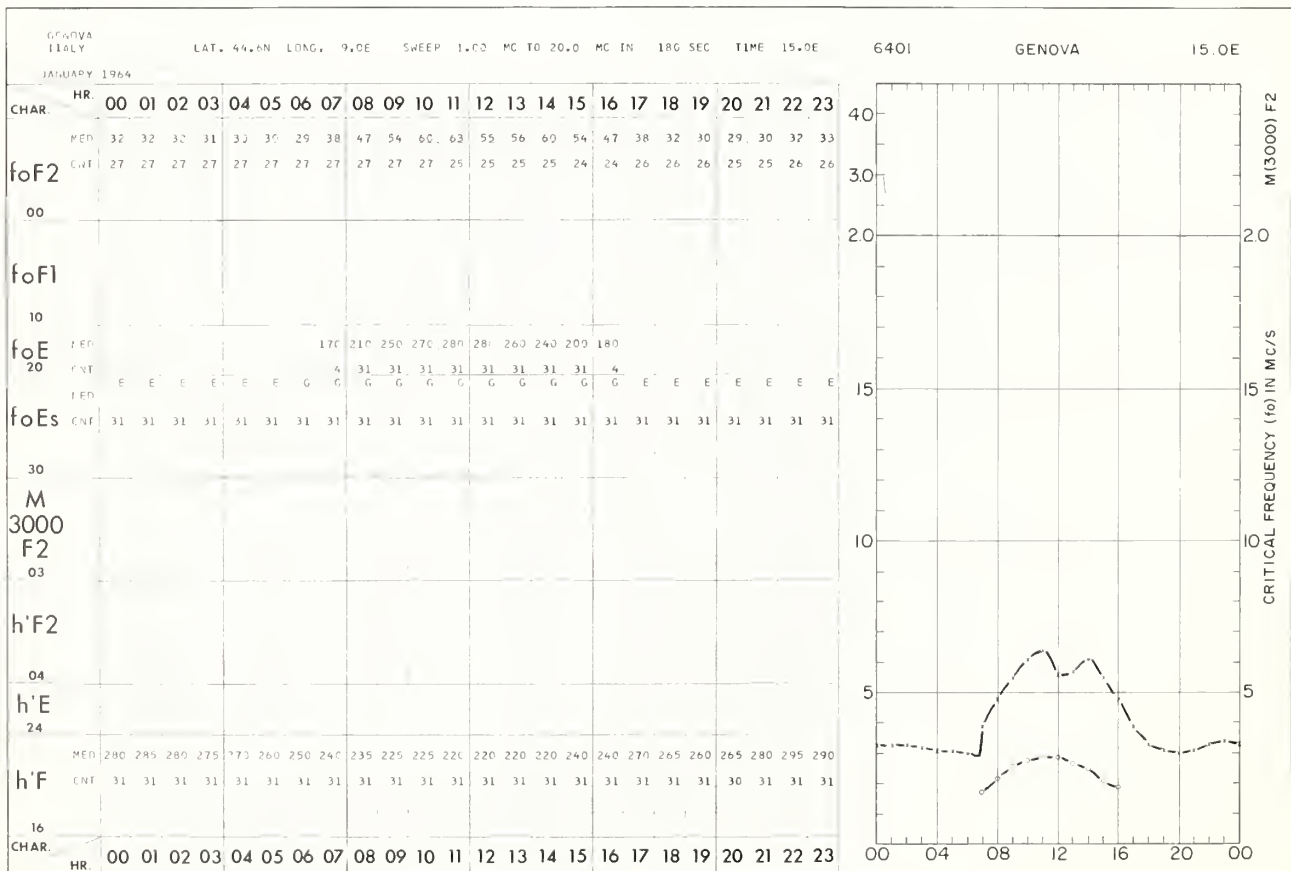
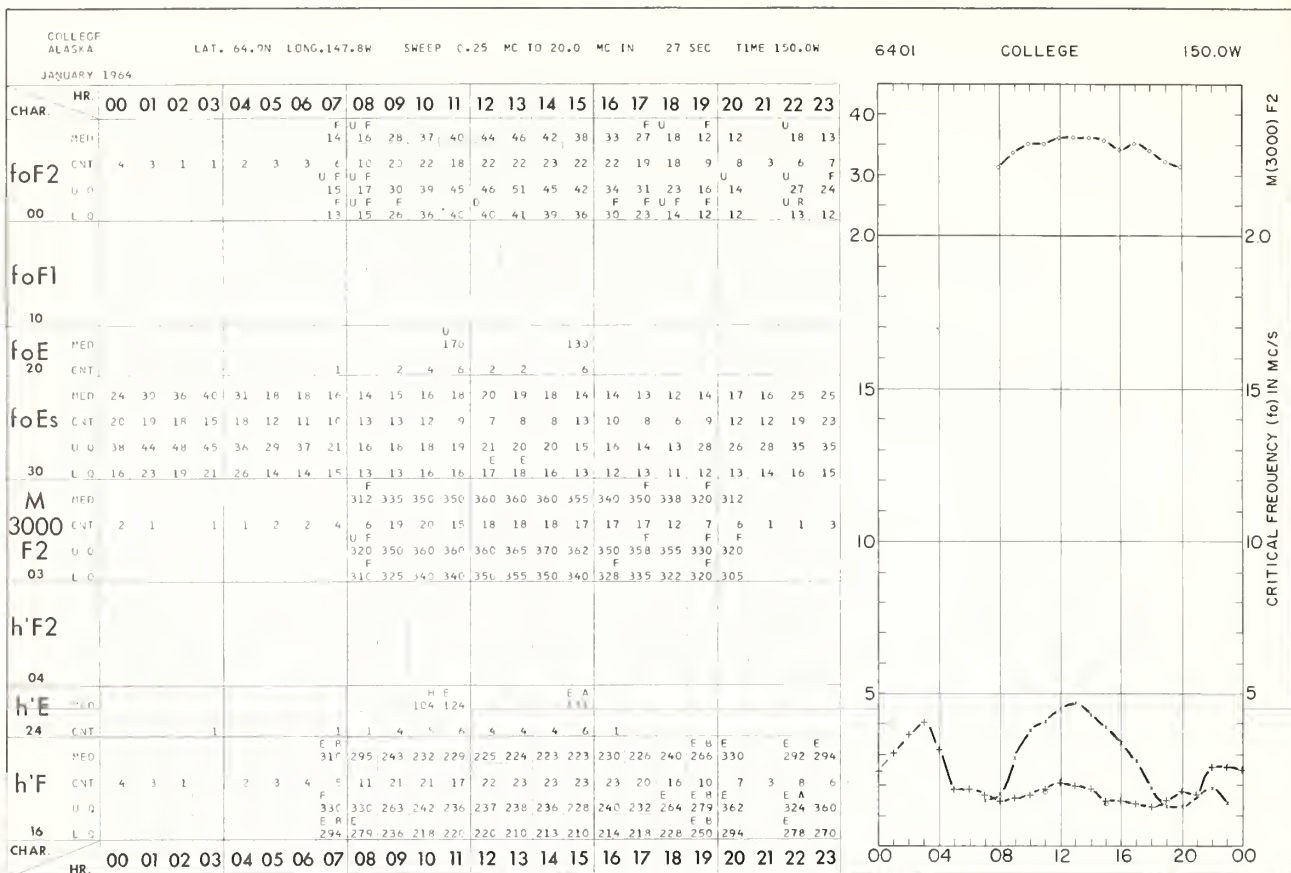


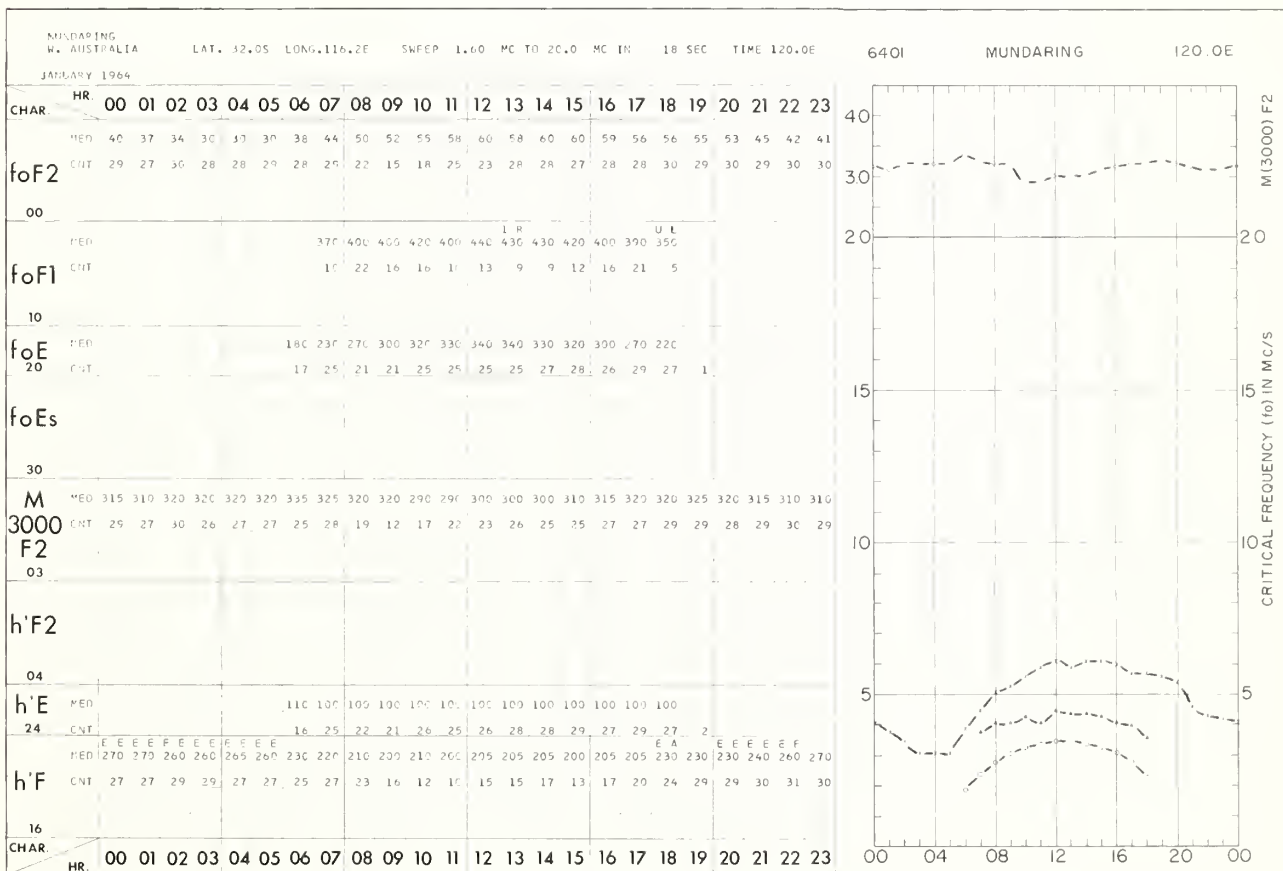
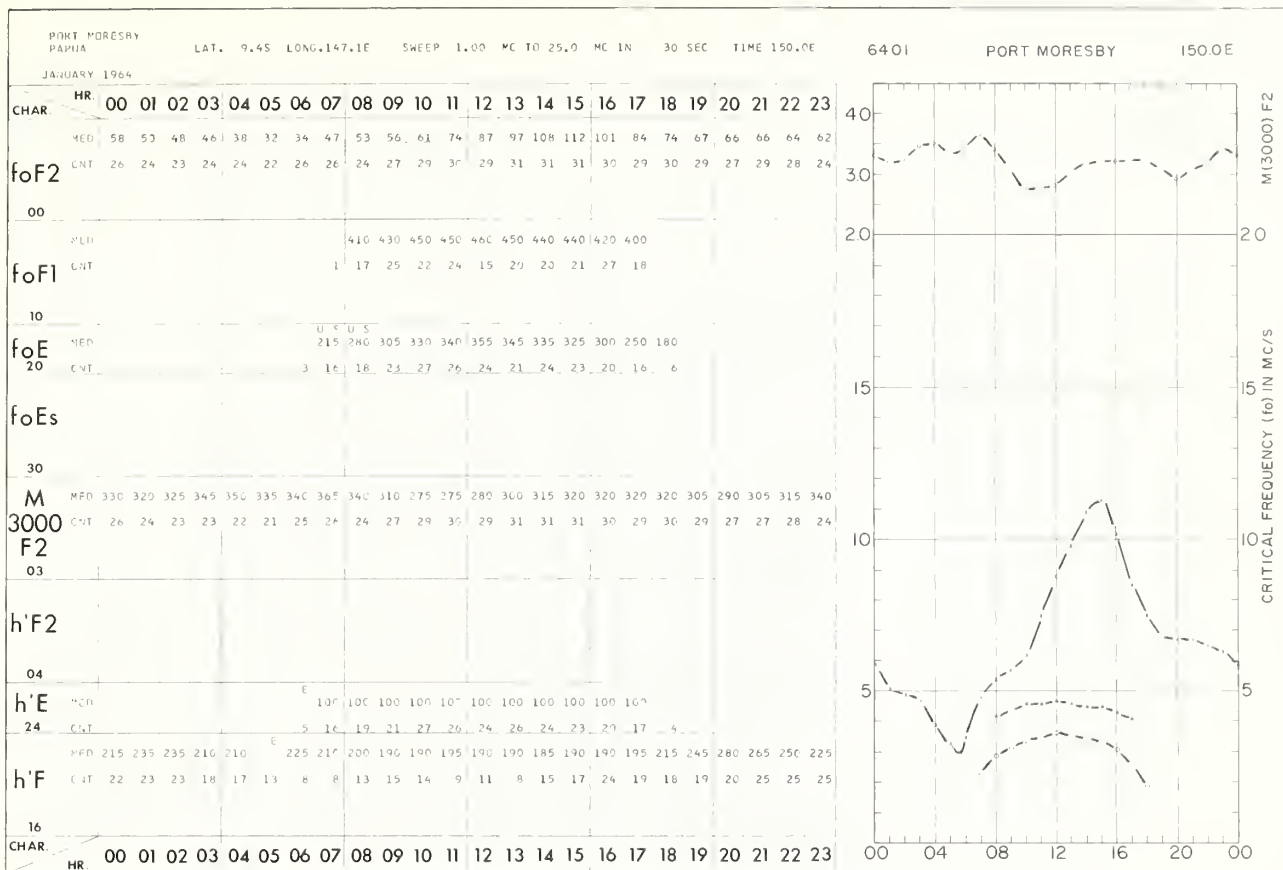


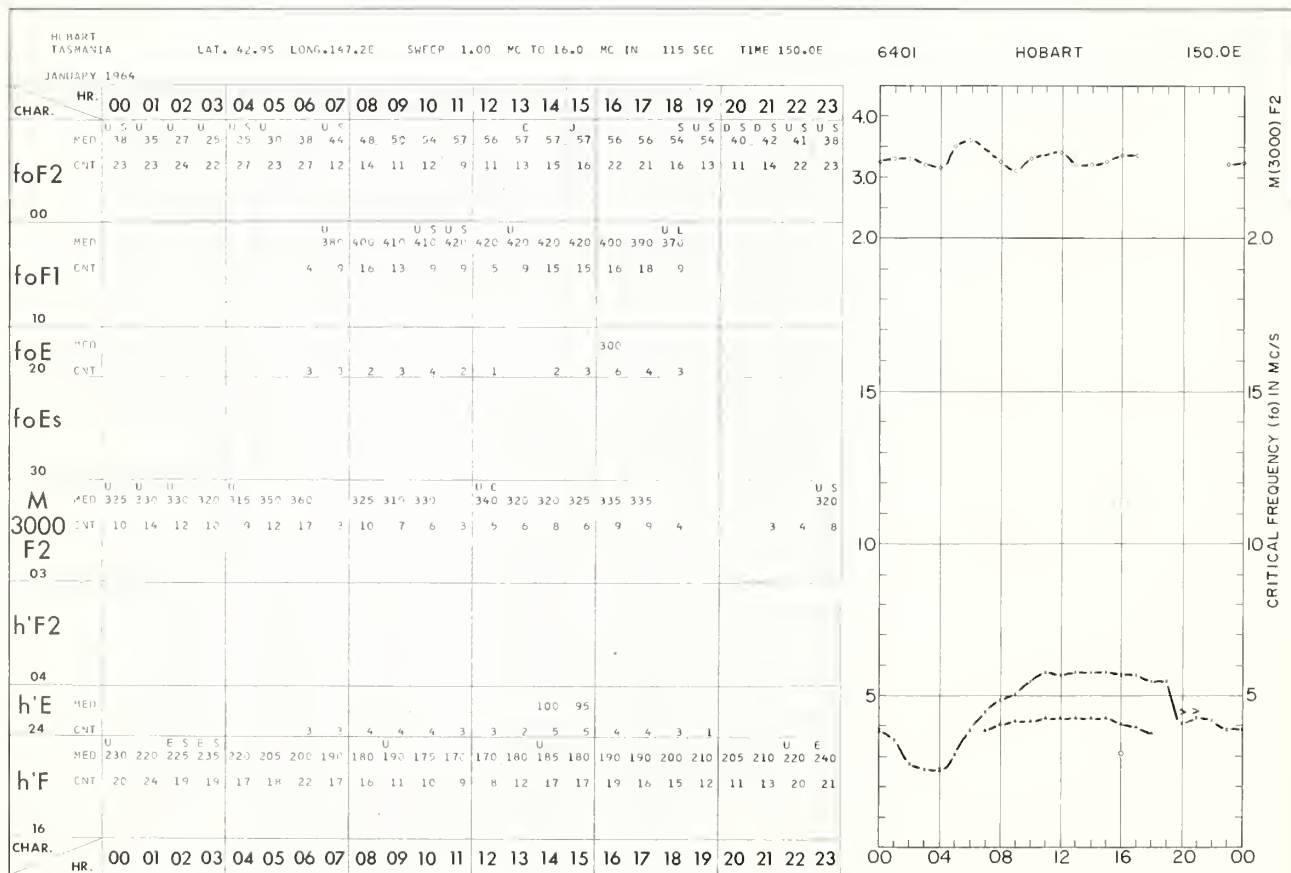
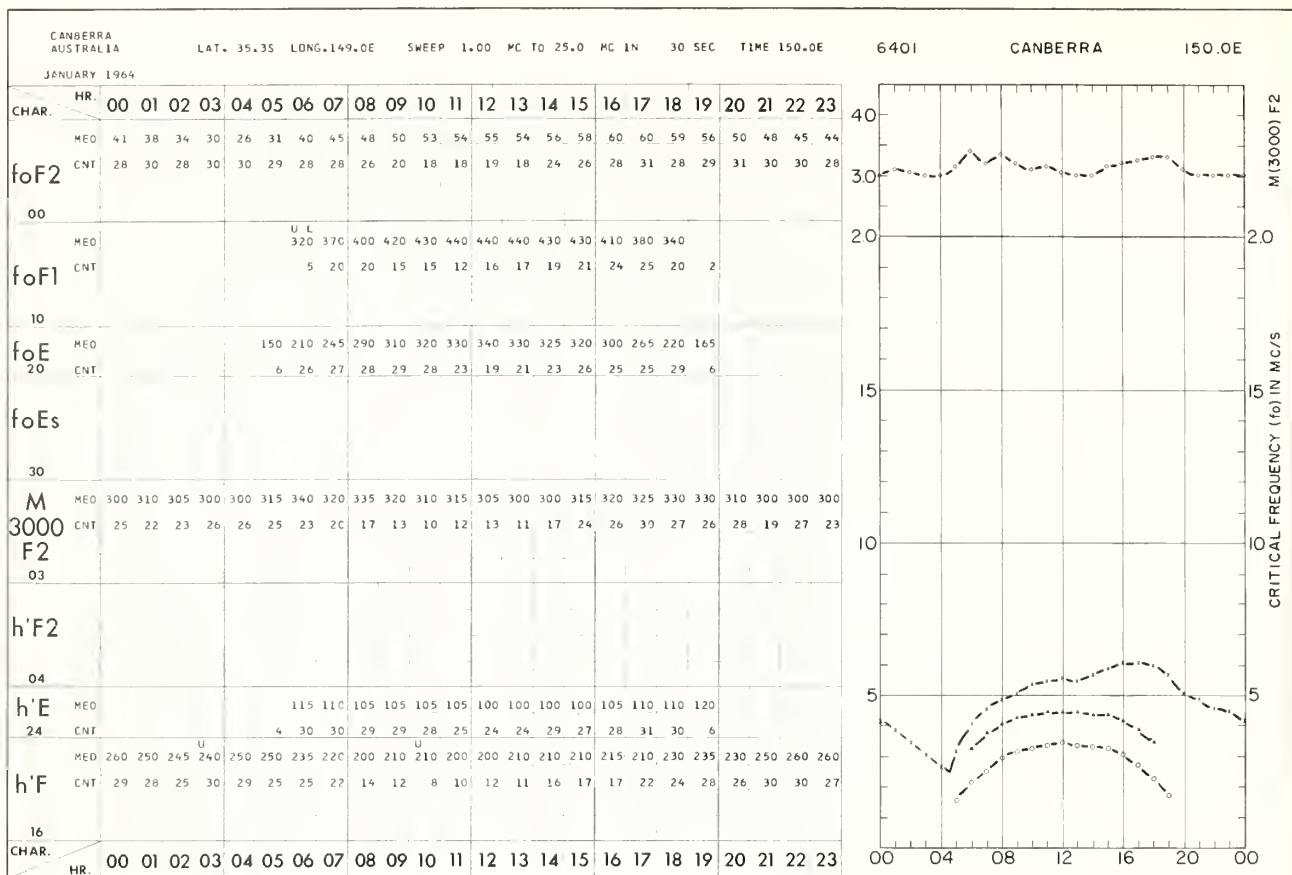


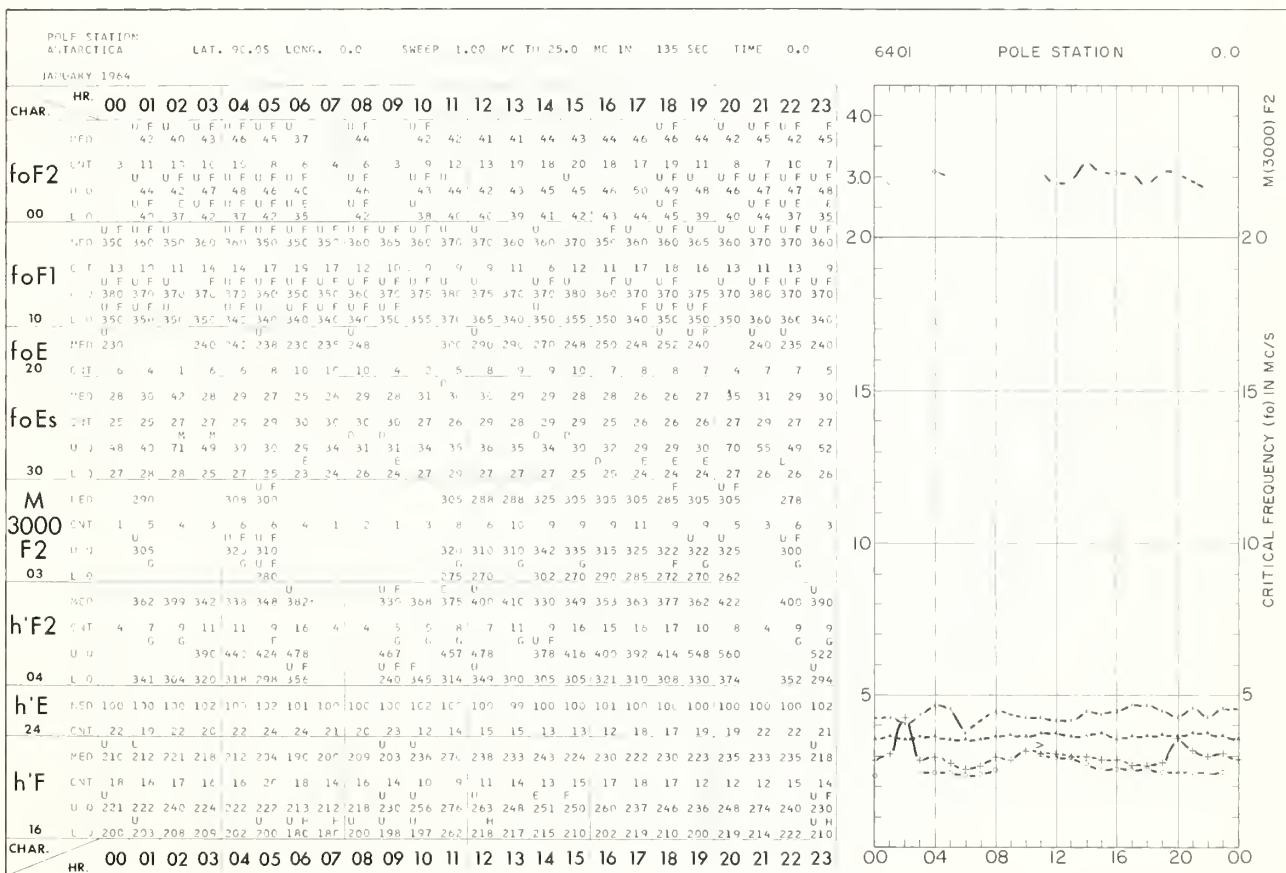
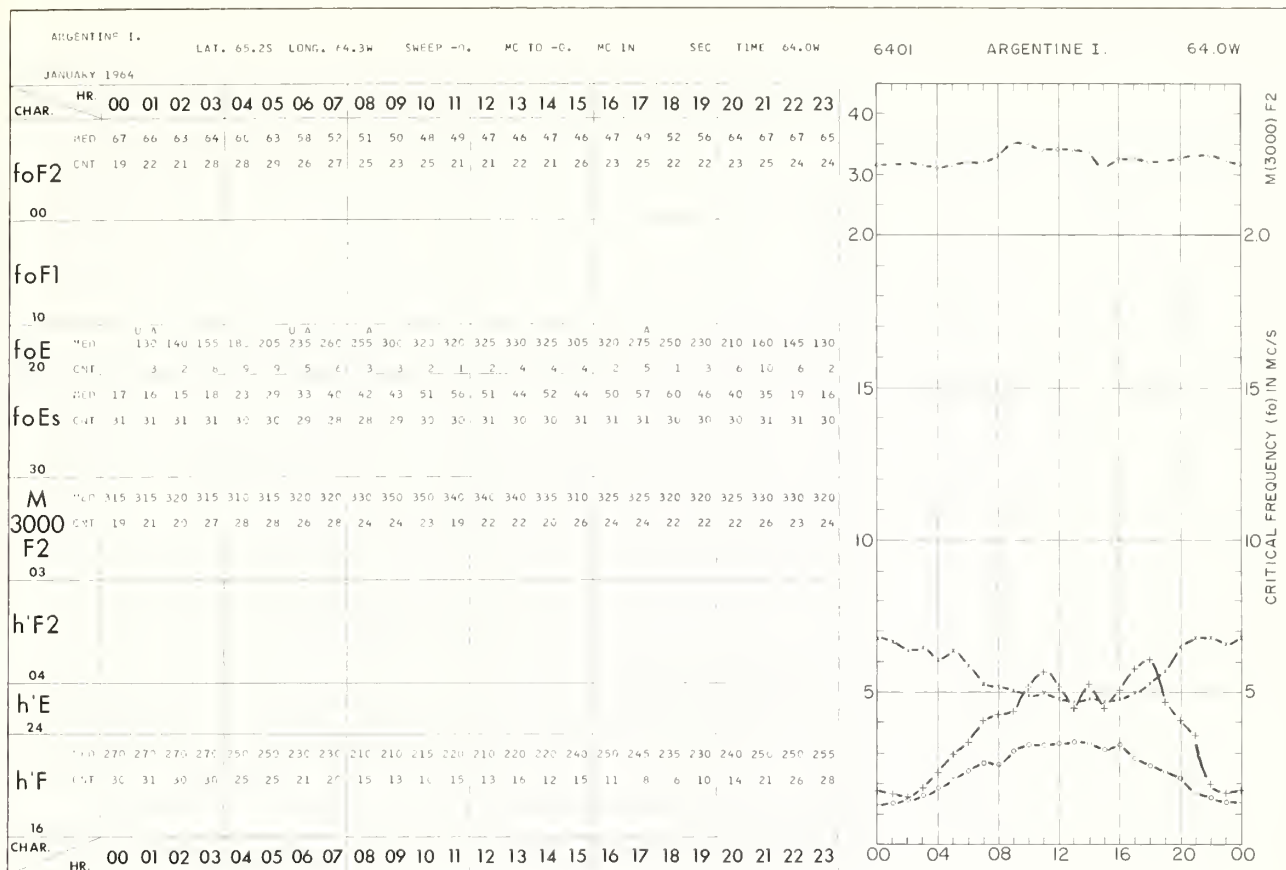


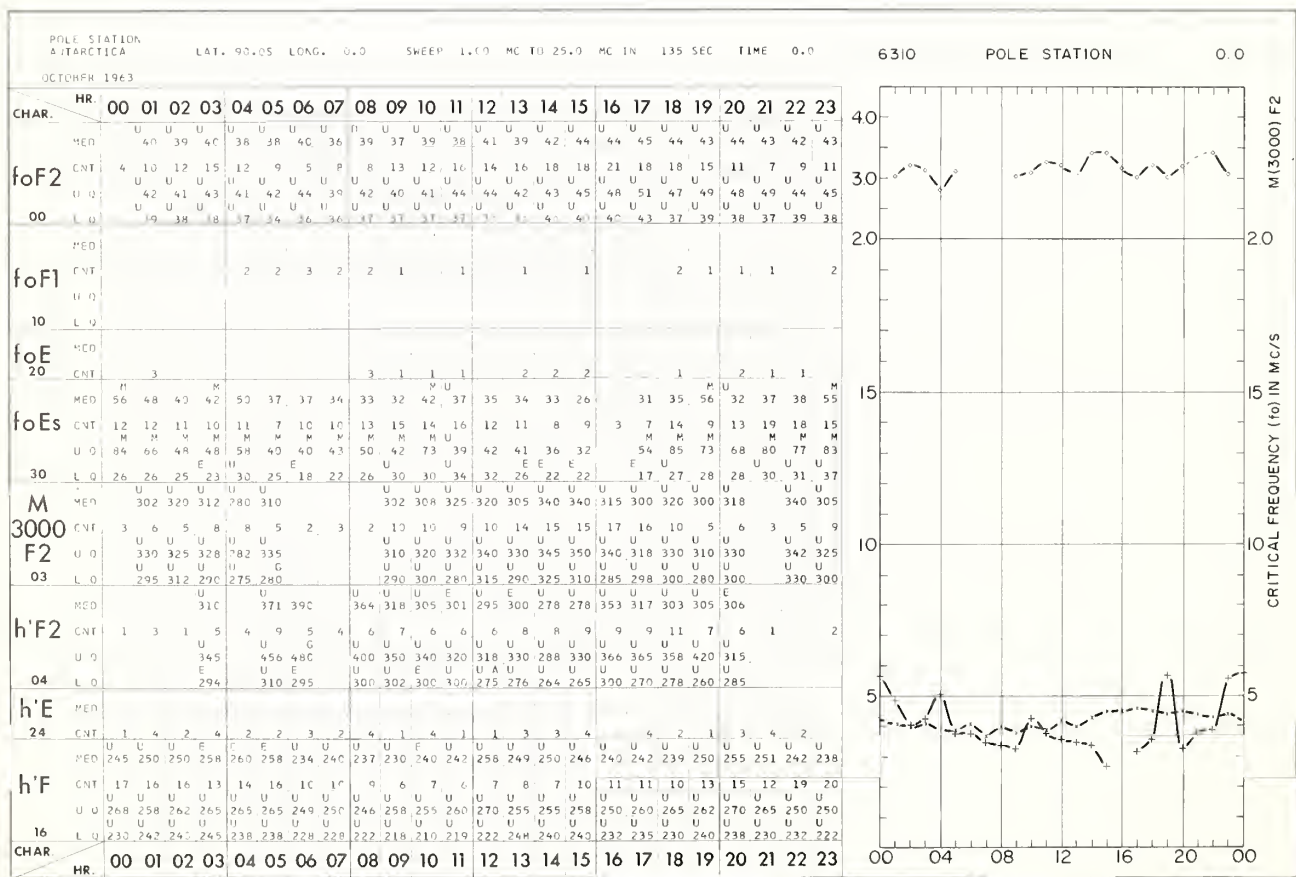
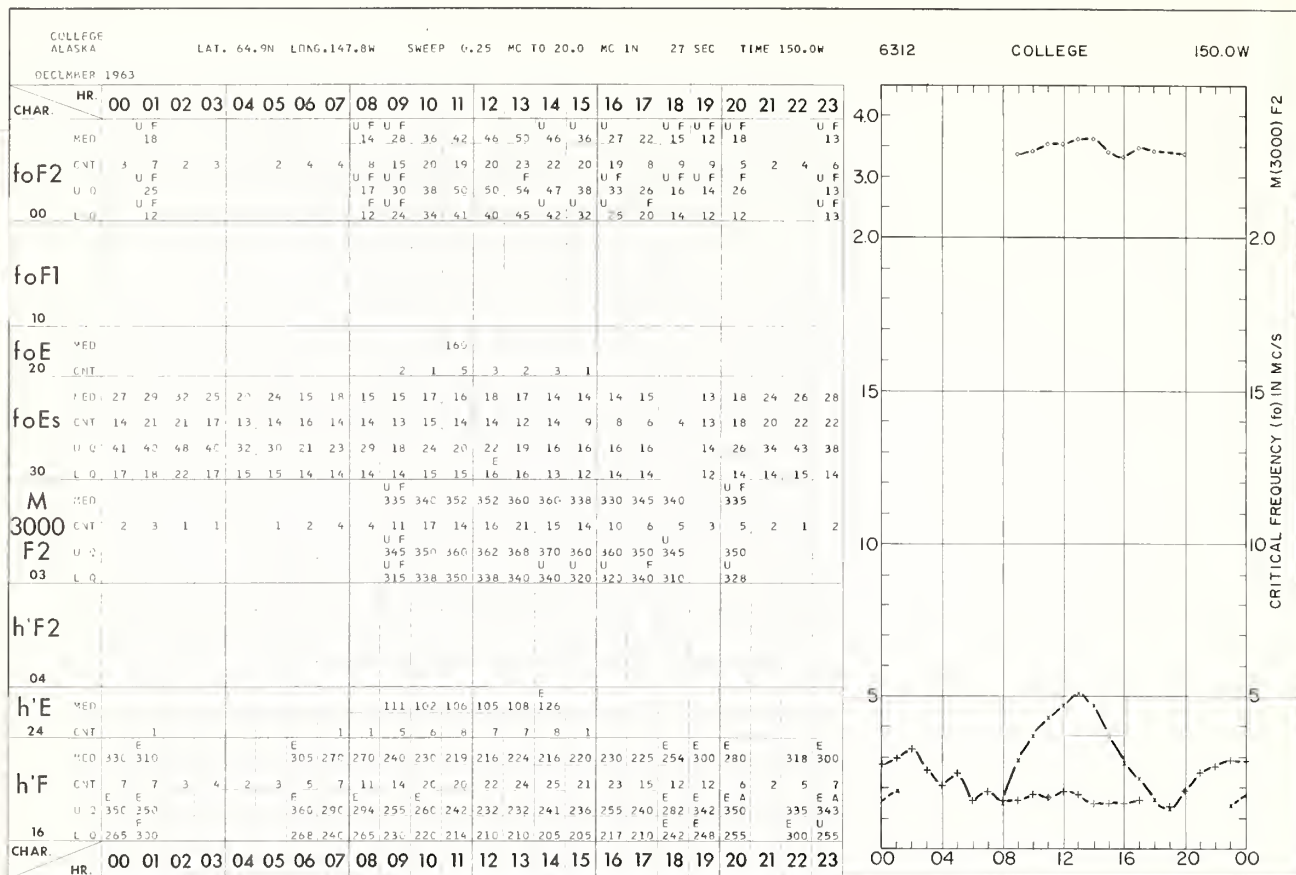












PAGE

ADAK	ALASKA	1965	JAN.	9
AHMEDABAD	INDIA	1964	OCT.	23
		1964	NOV.	21
AKITA	JAPAN	1964	NOV.	19
ARGENTINE I.		1964	JAN.	49
		1964	FEB.	45
ATHENS	GREECE	1964	DEC.	16
BARROW	ALASKA	1965	JAN.	5
BOGOTA	COLOMBIA	1964	DEC.	17
		1965	JAN.	14
		1965	FEB.	4
BOULDER	COLORADO	1965	MAR.	1
BRISBANE	AUSTRALIA	1964	FEB.	44
CANBERRA	AUSTRALIA	1964	JAN.	48
		1964	FEB.	44
CHURCHILL	CANADA	1965	JAN.	9
COLLEGE	ALASKA	1963	DEC.	50
		1964	JAN.	46
		1965	JAN.	7
DJIBOUTI	FRENCH SOMALILAND	1964	FEB.	42
		1964	MAR.	40
		1964	APR.	38
DOORBES	BELGIUM	1964	NOV.	18
		1964	DEC.	16
FT. BELVOIR	VIRGINIA	1965	JAN.	12
		1965	FEB.	2
GENOVA	ITALY	1964	JAN.	46
		1964	FEB.	41
		1964	MAR.	40
		1964	APR.	38
		1964	MAY	36
		1964	JUNE	35
GODLEY HEAD	NEW ZEALAND	1965	JAN.	14
GRAND BAHAMA I.		1965	JAN.	13
		1965	FEB.	3
HOBART	TASMANIA	1964	JAN.	48
		1964	FEB.	45
HYDERABAD	INDIA	1964	MAY	37
		1964	JUNE	35
		1964	JULY	32
		1964	AUG.	30
		1964	SEPT.	27
		1964	OCT.	24
IBADAN	NIGERIA	1964	FEB.	42
KENORA	CANADA	1965	JAN.	10
KIRUNA	SWEDEN	1965	JAN.	6
KODAIKANAL	INDIA	1964	SEPT.	28
KOKUBUNJI	JAPAN	1964	NOV.	20
LA PAZ	BOLIVIA	1964	OCT.	25
		1964	NOV.	22
		1964	DEC.	18

				PAGE
LINDAU/HARZ	GERMANY	1964	JUNE	34
		1964	JULY	32
		1964	AUG.	29
		1964	SEPT.	26
LULEA	SWEDEN	1964	JULY	31
		1964	AUG.	29
LYCKSELE	SWEDEN	1965	JAN.	7
MANILA	LUZON	1964	NOV.	21
		1964	DEC.	17
MAUI	HAWAII	1965	FEB.	3
MUNDARING	W. AUSTRALIA	1964	JAN.	47
NURMIJARVI	FINLAND	1965	JAN.	8
		1965	FEB.	2
OKINAWA I.		1965	JAN.	13
OTTAWA	CANADA	1965	JAN.	11
PARAMARIBO	SURINAM	1964	FEB.	43
		1964	MAR.	41
		1964	APR.	39
POLE STATION	ANTARCTICA	1963	OCT.	50
		1964	JAN.	49
PORT MORESBY	PAPUA	1964	JAN.	47
		1964	FEB.	43
PORT STANLEY	FALKLAND I.	1964	JULY	33
RESOLUTE BAY	CANADA	1965	JAN.	5
ROME	ITALY	1965	JAN.	11
SCOTT BASE	ANTARCTICA	1964	JULY	34
		1964	AUG.	31
		1964	SEPT.	28
		1964	OCT.	25
SINGAPORE	MALAYSIA	1964	OCT.	24
		1964	NOV.	22
SLOUGH	ENGLAND	1964	SEPT.	27
		1964	OCT.	23
SODANKYLA	FINLAND	1965	JAN.	6
		1965	FEB.	1
ST. JOHNS	NEWFOUNDLAND	1965	JAN.	10
TALARA	PERU	1964	JUNE	36
		1964	JULY	33
		1964	AUG.	30
TANANARIVE	MALAGASY REPUBLIC	1964	APR.	39
		1964	MAY	37
THULE	GREENLAND	1964	DEC.	15
		1965	JAN.	4
TROMSO	NORWAY	1964	DEC.	15
UPPSALA	SWEDEN	1965	JAN.	8
WAKKANAI	JAPAN	1964	NOV.	19
WARSAW	POLAND	1964	SEPT.	26
WHITE SANDS	NEW MEXICO	1965	JAN.	12
YAMAGAWA	JAPAN	1964	NOV.	20

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"Ionospheric Predictions."

This series of publications is issued monthly, three months in advance, as an aid in determining the best sky-wave frequencies for high frequency communications over any transmission path, at any time of day for average conditions for the month.

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